THE OIL WEEKLY

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The Oil Man's Calendar

MAR.	
20-22	**Western Petroleum Refiners Association, San Antonio, Texas.**
21-23	**Society of Exploration Geophysicists, Huckins Hotel, Oklahoma City.**
22-24	**American Association of Petroleum Geologists, Skirvin Hotel, Oklahoma City, Oklahoma.**
APR.	
3-7	**American Chemical Society, Baltimore, Maryland.**
4-5	**Eastern District A. P. I. Division of Production, Pittsburgh, Pa.**
11	**Pacific Coast District A.P.I. Division of Production, Los Angeles.**
13-14	**National Petroleum Association, Cleveland, Ohio.**
18-19	**Mid-Continent District, American Petroleum Institute Division of Production, Oklahoma City.**
18-20	**Southwest Gas Measuring Short Course, Norman, Oklahoma.**
24-29	**Oil-World Exposition, Houston, Texas**
MAY	
3-5	**Petroleum Electric Supply Association, Houston, Texas.**
3-5	**Petroleum Industry Electrical Association, Houston, Texas.**
3-5	**Natural Gasoline Association of America, Tulsa, Oklahoma.**
9-11	**American Institute of Chemical Engineers, Akron, Ohio.**
15-18	**American Petroleum Institute, Mid-Year Meeting, New Orleans, Louisiana.**
18-20	**National Oil Scouts Association, Houston, Texas.**
21-25	**National Association of Purchasing Agents, San Francisco.**
JUNE	
3	**Illinois-Indiana Petroleum Association, Robinson, Illinois.**
15-16	**Pennsylvania Grade Crude Oil Association, Hershey, Pa.**

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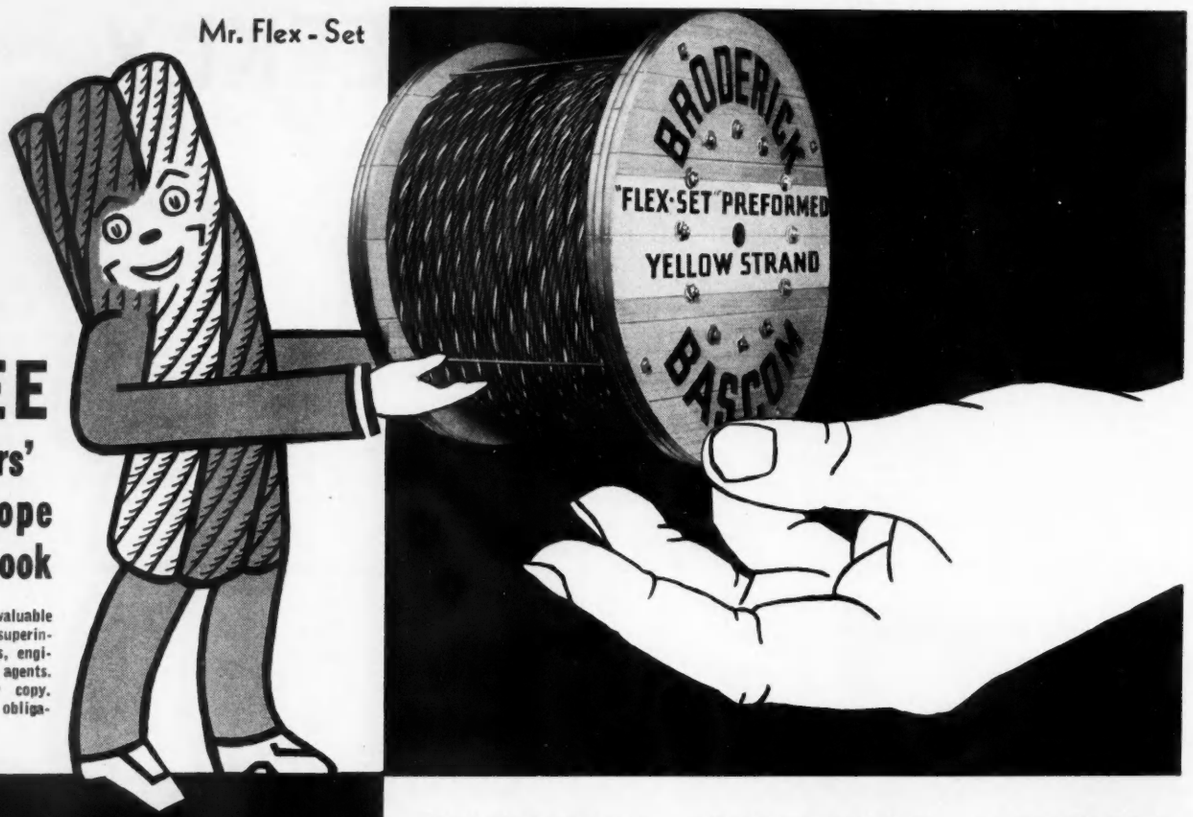
Mr. Flex - Set



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V-14 R-4

This Week's Panorama

ALTHOUGH this year has brought so far a sort of marking-time in business, following the encouraging advance of the latter half of 1938, current activity shows up favorably in comparison with that at this time last year.

Reserve Board Index Off

The Federal Reserve Board in its latest monthly bulletin stated that its seasonally adjusted index of industrial production was in February at 99 percent of the 1923-1925 average, after having been at 101 in January and 104 in December. The index stood in February, last year, at 79.

The board's index averaged 119 in 1929, 64 in 1932, and 110 in 1937. (It rose to a pre-recession peak of 118 in May, 1937.) In May, 1938, the index dropped to a recession low of 76, and for the whole year 1938, the average was about 85. Some economists have forecast that the average for 1939 will be from 105 to 110, and that the 1940 average may be around 115. If the 1939 forecasts are to be fulfilled, business activity must improve at least 5 to 10 percent from present levels.

The present industrial output is approximately the same as the current consumption of goods by individuals and industry, according to the board. A further increase, under existing circumstances, it stated, appeared to depend on larger consumption arising out of such factors as additional growth in private residential building, larger outlays for plant and equipment, and greater public expenditures for construction or other purposes.

Gains Over Year Ago Shown

Although business activity has temporarily ceased to advance, it is fairly well holding the gains made in the latter part of 1938.

Automobile production and sales continue encouraging. Factory output currently is nearly 50 percent greater than at this time last year. Coal production is running about one-third higher than a year ago. Electric power production in the week ended March 4 was approximately 10 percent higher than in the corresponding week last year. Steel production in the week ended March 13 was estimated at 55 percent of capacity, compared with 30.5 percent in the similar week of 1938.

Construction work continues relatively vigorous. The dollar volume of building permits in January was 13 percent under a year before. But engineering construction awards for the first 10 weeks of 1939 were 23 percent larger than in the corresponding period last year. Home mortgages selected for appraisal by the FHA reached a new high in the week ended March 4, when they were about 50 percent above a year previously. In the first 8 weeks of 1939 lumber production was 26 percent above a year before, shipments were up 15 percent, and new orders were 6 percent greater. Paperboard production was 20 percent higher in January, 1939, than in January, 1938. There are more ships under construction now than at any other time for many years, the present tonnage being over 80 percent greater than that a year ago.

Commerce compares favorably with a year ago. Freight car loadings in the week ended March 4 were 8.3 percent above a year previously. There is about 5 percent more money in circulation per capita now than a year ago. Bank deposits at the end of 1938 were 5.7 percent larger than a year before and at the highest level on record. Retail sales of chain stores and mail order houses are running over 6 percent higher than at this time last year, and sales of department stores are up similarly. Tire shipments, in line with increased sales of automobiles, were 70 percent larger in January, 1939, than in January, 1938. Sales of electrical machinery by manufacturers during January were 14 percent larger this year than last year. Corporate financing is running more than twice as heavy as last year. Stock market prices are about 25 percent higher than at this time last year. Commodity prices have been improving some lately, but are about 10 percent lower than a year ago.

Oil Company Dividends Down

Because of lower earnings, oil companies will make lower dividend payments in the first quarter of 1939 than in the corresponding period of 1938.

Carl H. Pforzheimer & Company, New York, has estimated that cash dividend payments by the companies of the Standard Oil group for the first quarter of 1939 will be about $22,314,894, or 5.2 percent less than the $23,550,943 distributed by those companies in the initial quarter of 1938.

A majority of the companies normally making payments in the first quarter are paying the same amounts in the current quarter as in the similar period of last year. The decline reported in the total for the group principally reflects the smaller extra dividend paid by Standard Oil Company of California, the only major company in the group paying less this quarter than a year ago. Reduced payments as compared with the initial quarter of 1938 were declared also by Buckeye Pipe Line Company, South Penn Oil Company, and Union Tank Car Company, while the redemption by the Ohio Oil

Company last September of 30 percent of its outstanding 6 percent preferred stock resulted in a substantial reduction in the amount paid on this issue.

Investigation of Industry Begins Soon

A thorough investigation of the petroleum industry by the Temporary National Economic Committee is expected to begin within about a month.

The investigation will extend to all the industry's activities, from production through marketing. However, the relationships between the refining and marketing divisions apparently will be subjected to a particularly searching inquiry.

The Department of Justice has accumulated much data on the oil industry, for presentation to the TNEC.

It is stated also that the Federal Trade Commission is compiling information on the oil industry as a part of the monopoly study of the TNEC, particularly on marketing and distribution.

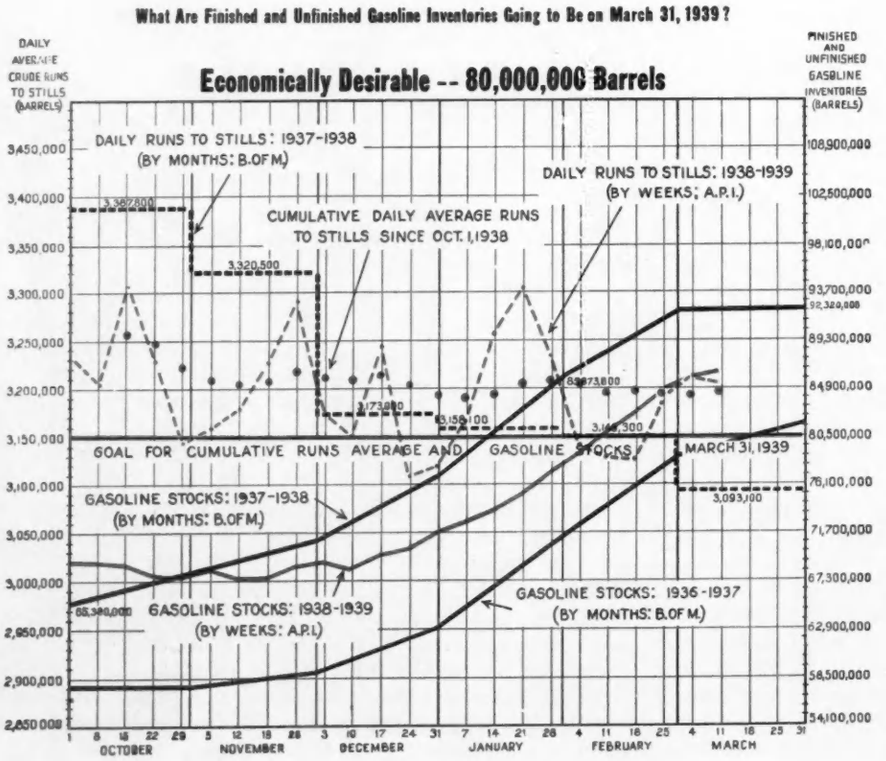
Much is being said currently about the threat of federal government control of the petroleum industry. G. A. (Jerry) Sadler, new member of the Texas Railroad Commission, has been among those that lately have brought up the subject. He warned that federal government regulation of the railroads and of cotton growing had proved unsuccessful; that the most practical government cooperation with the oil industry is through state conservation machinery.

Charles F. Roeser, president of the Independent Petroleum Association of America declared in a recent address that if the oil industry does not remedy its problems within a year, the federal government will pass laws to place it under government control. He asserted that the oil companies should cooperate particularly in better regulation of refinery operations.

Smaller Gasoline Stock Increase Provides Hope

FURTHER encouragement that the industry may enter the spring consuming months in a better inventory position than a year ago was offered by the latest weekly statistics. The rate of additions to gasoline stocks continued to diminish and daily average crude runs to stills decreased considerably, indicating that gasoline storage on March 31 may not be as large as believed likely a few weeks ago and that they would be below the level in existence on that date a year previous.

Consequently, the above important developments, coupled with the anticipated increase in consumption, indicates that the gasoline market may not be as heavy a drug on the industry as in 1938, when it caused prices to be depressed throughout the period because of the early surplus accumulation of gasoline stocks and which finally resulted in both refined and crude postings being reduced. Therefore, some of the anxiety expressed recently over the rapid expansion rate of gasoline inventories has been dispelled and in its place a hopeful outlook has developed.



What the industry is facing is a period when crude runs to stills will be reduced and when gasoline stocks will increase at a smaller rate than in 1938. Whether or not the industry will be able to avoid a surplus of gasoline stocks depends largely on the rate of increase in consumption.

For the second consecutive week only minor additions were made to gasoline stocks. During the week ended March 11, latest period for which figures are available, they rose but 587,000 barrels. Thus, with only 782,000 barrels added during the previous week, gasoline stocks increased but 1,369,000 barrels during the last two weeks, which is considerably smaller than the 1,829,000-barrel average gain during the preceding four weeks.

Although these stocks now total 85,966,000 barrels (on March 11), which is approximately 6,000,000 barrels more than the 80,000,000 barrels economists consider economically desirable, the diminishing rate of increase indicates they may not exceed 87,500,000 barrels on March 31, which would compare with 92,320,000 barrels at that time last year. Thus, the industry may be approximately 5,000,000 barrels better off than in 1938.

The running of less crude to stills during the week ending March 11 assisted in the reduction of additions to gasoline inventories. Crude runs to stills during the week averaged 3,205,000 barrels daily, in contrast with 3,230,000 barrels the preceding week.

The accompanying chart shows the trend of refinery runs and fluctuations of gasoline stocks during the present fall-winter season.

Benefits of Proration Shown by Current Situation

By ERNEST O. THOMPSON
Chairman Interstate Oil Compact Commission
and Member Texas Railroad Commission

THERE never was a business in the world that has gone forward so fast as the oil discovery business. For example, last year in Texas 91 new fields were discovered and 12,000 new wells were drilled. Yet we end up with less production than we were producing one year ago. We have found the oil, but the trouble is markets have not increased as fast as we have found the oil. The oil is still in the ground.

Up in Illinois, they have brought in new fields which are now producing 160,000 barrels a day and this new oil has found its way into the market to the detriment of the oil markets of Kansas, Oklahoma and Texas.

I am reliably informed that currently up to 5000 barrels a day of Illinois oil is being offered at 45c per barrel under the posted price. This means that this unwanted and unneeded oil is filtering through and into other territories.

We have been trying to see if we could not so adjust production in those states that have production control laws and enforcement agencies that this unregulated Illinois production would not be allowed to ruin the market. For the week ending March 4, the production of oil in the United States was 3,329,437 barrels per day. The Bureau of Mines estimate of market demand was 3,340,000 barrels daily.

Thus, you will see that over all, we are 10,000 barrels per day under the estimated market demand. This shows you what conservation and proration regulation can do in spite of new discoveries even as great as the Illinois field.

In the old days before proration and conservation were in effect, the bringing in of fields such as Illinois, would have broken the market and oil would have gone to 10c a barrel perhaps, just as it did when Spindle Top came in in 1901 and East Texas came in in 1930. But with such control as we have, the oil markets have been sustained and whether you like conservation and proration or not, the benefits are yours.

The Illinois situation has not brought the chaos that formerly followed the discoveries of any new fields. Those who chafe at Saturday and Sunday shut-downs and low allowables can console themselves with the fact that under strict conservation and tight proration, the market has been protected and sustained.

Thus, I believe it is safe to say that we have arrived at a point where we can justly and fairly estimate the value even in an emergency in conservation and proration. It has protected the money that the independent operators and the bankers have invested in their properties.

In the past, only the biggest units of the industry benefited by depressed prices. Under proration, the small man is protected. He may not think he is being protected very much, but I call your attention to the fact that his collateral is still in the ground and his banker is still safe because the collateral is still behind the loan and the price has been preserved. The little operator can thus hold on to his property.

Think what would have happened if we had not had proration in 6 of the principal states when Illinois came in. Think what would have happened if oil had gone to 10c a barrel. Loans would have been called. Operators would have been wiped out. Properties would have gone to whomever could have bought them at sacrificed prices. So I say that in my opinion, we are fortunate in that we have had this rock of protection to protect us during this storm.

If you want an example of the difference between the regulated and the unregulated ends of the industry, just take a look and see what the refining end of the industry has been doing as compared to the producing end of the industry. For the past year, production has been under good control. A year ago, we had 305,000,000 barrels of crude in storage above ground. Today, we have 272 million barrels. That is a reduction of 33,000,000 barrels in one year's time. Not only have we kept production within consumption, but we have kept it low enough that they have had to go to the bone yard and reduce these stocks of storage. This has meant firm conditions. This has meant good prices. Not only have we offset the new production by curtailment, but they have had to go to the bone yard to get supplies. Production control has been to me surprisingly good.

Gasoline refining, while production was being held down to reasonable bounds, has gone wild. Gasoline stocks on March 4 stood at 85,000,000 barrels. A year ago, they stood at 92,000,000 barrels. No doubt the refiners could have by proper restraint, kept stocks so that they would not have reached more than 82,000,000 barrels by March 1, and here they are with 85,000,000 barrels on March 4. The chances are that they will run up to 95 or 100 million barrels before the consuming season gets under way. Those heavy gasoline stocks mean that gasoline prices will be effected adversely and that when gasoline prices break it is promptly reflected in crude prices. All which is grossly unfair to the producer who has shown his restraint.

We are going to try and put the refineries under control by statute just like production. There is no more sense in refining too much than in producing too much and it is much more dangerous to the price.

Drilling Activity Gathers Considerable Momentum

Although completions first two months of 1939 lag 6 percent behind year ago, a similar increase in rigs operating indicates gain for March

By L. J. LOGAN, Associate Editor

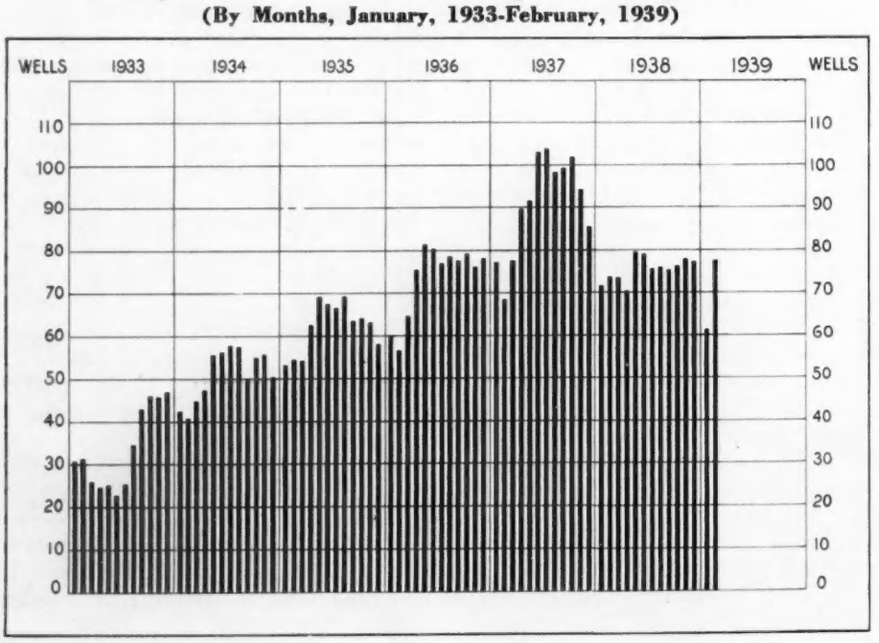
AFTER having made a slow start in 1939, the petroleum industry has gathered momentum in its drilling activity, and it is indicated that well completions may proceed at rates comparable with those in 1938.

For the first two months of this year, completions were 6.1 percent below those in the corresponding period last year. But field work increased appreciably in February, after having lagged in January. And a comparatively large number of completions appears in store for March, the number of rigs in operation at the beginning of the month having been materially larger than at the beginning of February and 6 percent more numerous than on March 1 last year.

The revival of drilling in February apparently resulted from various circumstances. In the first place, crude prices have remained fairly satisfactory, despite disturbed markets in several districts, and operators have indicated confidence, although there has been some talk of possible crude price reductions.

Conducive to more active drilling, in the second place, has been some actual improvement of the crude oil market. In the Eastern States, for example, crude prices have been advanced three times this year, as increased industrial production has strengthened the demand for lubricants and for the Pennsylvania grade crude from which quality lubricants are made. In some fields of Oklahoma and other sections of the Mid-Continent, pipe line proration of purchases has been partially or wholly discontinued, as markets have improved. Consequently, selling of crude for less than the posted prices has diminished. In California, determined and at least partially successful efforts are being put forth to hold crude oil production within economic limits, and those efforts naturally have tended to strengthen the markets and to give inducement for continued drilling.

Average Number of Wells Completed Daily in U. S.
(By Months, January, 1933-February, 1939)



Oil Demand Good

Although better markets have been directly responsible for stimulation of field development, a more fundamental factor has been the especially favorable demand for oil so far this year. Particularly encouraging has been the consumption of gasoline, which has fulfilled the most optimistic hopes and exceeded some of the more conservative forecasts. The favorable demand for gasoline has resulted in part from the unusually mild weather this winter, from fulfillment of the expectations of an increase of around 5 percent in domestic consumption, and from continued relatively heavy exports, despite some slowing down of foreign shipments in recent weeks.

The heavy demand for gasoline has tended to maintain refinery runs at relatively high levels, and the large requirements of the refiners have had the immediate effect of promoting stronger crude markets and greater incentive to drill new wells.

Drilling Still Attractive

Clamor has been raised lately about excessive drilling and the need for wider spacing of wells, in the interest of efficiency and economy. But operators apparently still pay more attention to the prevail-

ing and prospective prices of crude oil than to the pleas of speakers, in deciding whether or not to drill wells.

It is true that increased potentials and new wells have resulted in lower per-well production allowables. But the decline of allowables has been gradual, and proration has helped to maintain flowing production and stable markets; and the continued relatively heavy drilling is conclusive evidence that operators still find inducement to invest in additional wells.

In addition to the above mentioned favorable factors that now prevail in the industry's situation, the seasonal influence currently is exerting a stimulating effect on drilling. March nearly always furnishes more completions per day than January and February, and this month the gain probably will be greater than normal for the season.

Results in February

Well completions in the United States in February averaged 77.8 daily, having increased sharply from the 61.2 daily of January. This was approximately the same amount of drilling as in each month in the latter half of 1938.

Figures are herewith presented showing a comparison of February drilling this year with that in the preceding six years.

February of	Average Number of Wells Completed Daily
1933	31.2
1934	40.8
1935	54.4
1936	56.6
1937	68.6
1938	73.9
1939	77.8

These figures show how impressively drilling was maintained during February, the average daily completions having been the most numerous for that month since the big depression.

Although the comparatively little drilling of January was responsible for fewer completions in the first two months of 1939 than in the similar period of 1938, various districts have had more drilling this year than last year.

Illinois continues in the limelight, as development of its flush fields proceeds. So far this year, the state has had five times as many completions as up to the corresponding time last year.

Adjoining Indiana has had nearly twice as many completions this year as last year; and Kentucky, also neighbor to Illinois, has been more active than last year.

Arkansas remains among the especially active states, having had 25 percent more completions in the initial two months of 1939 than in the corresponding period of 1938.

New Mexico is a little more active than last year, and increases over a year ago are shown in Montana and Wyoming.

Although Texas as a whole has had about 11 percent fewer completions than last year, the 1938 levels of drilling are being exceeded this year in North Texas, all sections of South Texas, and West Texas.

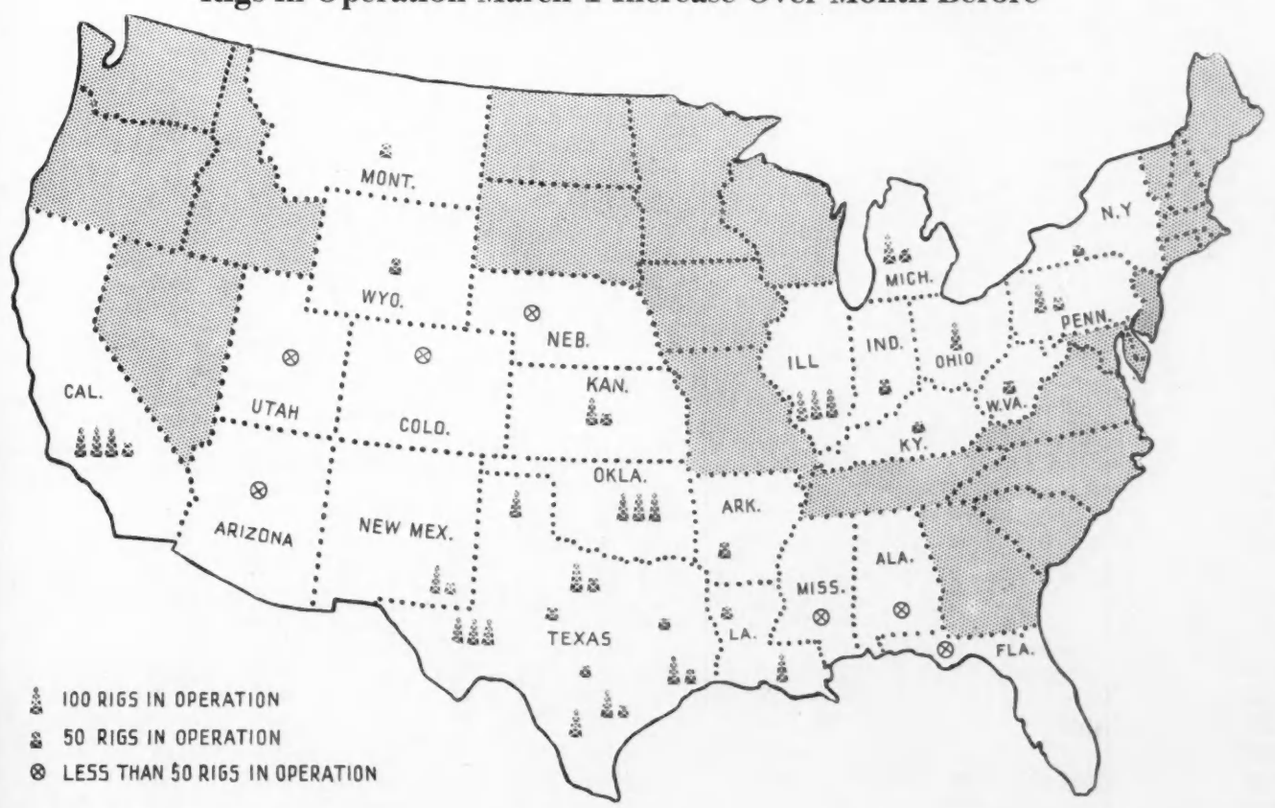
Decreases Registered

In districts other than those mentioned above, there was less drilling in the first two months of 1939 than in the corresponding period of 1938.

California is fulfilling general expectations, having had 23 percent fewer completions this year than last year.

Although the prices of Pennsylvania grade crude have been raised three times since late Jan-

Rigs in Operation March 1 Increase Over Month Before



Number of Drilling Rigs in Use Shows Increase

STATE OR DISTRICT	TOTAL RIGS IN OPERATION (Drilling, Rigs Up, Shut-Down) Jan. 1, 1939	Feb. 1, 1939	Mar. 1, 1939	Mar. 1, 1938	Percent Change from Year Ago	DETAILS OF MARCH 1, 1939, ACTIVITY Rigs in Operation: Drilling	Rigs Up	Shut-Down	Prelim. Activity: Derricks	Locations	Total Operations
Arkansas	39	39	31	51	— 39.2	18	3	10	6	6	43
Arizona	4	5	6	...	...	4	2	...	...	1	7
California	304	327	340	390	— 12.8	216	66	58	27	22	389
Colorado	24	19	19	22	— 13.6	7	...	12	...	1	20
Eastern States	867	867	1,076	563	+ 91.2	381	221	474	100	132	1,308
Illinois	372	326	309	128	+141.0	68	79	162	35	44	388
New Fields	262	231	218	60	+263.5	51	70	97	31	29	278
Rest of Illinois	110	95	91	68	+ 33.8	17	9	65	4	15	110
Indiana	36	38	36	40	— 10.0	17	3	16	1	8	45
Kentucky	84	76	69	56	+ 25.0	31	6	32	11	19	99
New York	33	28	28	35	— 20.0	18	4	6	4	5	37
Ohio	125	118	122	172	— 29.1	65	19	38	4	4	130
Pennsylvania	141	148	130	121	+ 7.4	65	22	43	3	3	136
West Virginia	76	71	73	139	— 47.4	49	9	15	7	5	85
Kansas	168	189	160	280	— 43.0	115	14	31	6	8	174
Louisiana	200	184	189	215	— 12.1	153	12	24	14	35	238
North Louisiana	98	75	74	104	— 28.8	54	2	18	5	5	84
South Louisiana	102	109	115	111	+ 3.6	99	10	6	9	30	154
Michigan	159	169	155	165	— 6.1	101	17	37	11	39	205
Montana	42	42	45	37	+ 18.9	11	4	30	...	...	45
Nebraska	1	3	1	3	— 66.7	1	...	...	...	...	1
New Mexico	141	119	130	95	+ 36.9	94	9	27	6	6	142
Oklahoma	295	371	321	329	— 2.4	199	51	71	23	19	363
Southeastern States	19	15	22	21	+ 4.8	3	1	18	...	1	23
Alabama	5	4	6	4	+ 50.0	1	1	4	...	...	6
Florida	5	5	5	4	+ 25.0	1	...	4	...	1	6
Mississippi	9	6	11	13	— 15.4	1	...	10	...	...	11
Texas	1,098	1,176	1,475	1,565	— 5.7	1,125	115	235	105	423	2,003
East Texas Field	39	28	10	88	— 8.9	5	...	5	...	1	11
East Texas Border Co.'s	23	13	10	30	— 66.7	5	...	5	1	1	12
Rest of East Texas	27	30	32	48	— 33.3	13	2	17	4	3	39
North Texas	145	163	148	267	— 44.6	104	11	33	11	43	202
South Texas	310	324	329	461	— 28.6	258	33	38	28	102	479
Corpus Christi Area	155	165	173	317	— 45.4	148	14	11	12	69	254
Laredo Area	87	97	95	89	+ 6.7	66	15	14	10	22	127
San Antonio Area	68	62	61	55	— 10.9	44	4	13	6	11	78
Texas Gulf Coast	128	135	153	139	+ 10.0	145	6	2	16	79	248
Texas Panhandle	72	67	71	109	— 34.8	53	7	11	5	17	93
West Texas	282	340	310	361	— 16.5	244	15	51	12	68	390
West Central Texas	72	76	83	62	+ 33.8	40	8	35	...	9	92
Utah	1	...	1	4	— 75.0	1	...	...	...	...	1
Wyoming	72	58	58	60	— 3.3	18	3	37	...	2	60
Total United States	3,435	3,521	4,029	3,800	+ 6.0	2,447	518	1,064	298	695	5,022

uary, the better postings have not yet been reflected in the drilling statistics of the states that yield that type oil. New York, Pennsylvania, Ohio, and West Virginia all have had substantially less drilling so far this year than up to this time last year.

In Kansas, completions are running about 40 percent under those of last year, while Oklahoma shows about 20 percent less drilling.

Louisiana drilling is off approximately 25 percent, with North Louisiana showing a larger decline than South Louisiana.

Michigan has had 30 percent less drilling than last year.

Responsible for the decrease of about 11 percent in Texas development have been declines in Eastern Texas, the Texas Gulf Coast, and the Texas Panhandle.

Rigs in Operation

Drilling rigs in operation in the United States totaled 4029 on March 1, 1939. That was a relatively large number, having been considerably above the totals of 3435 on January 1 and 3521 on February 1. The active rigs of March 1, 1939, were 6 percent more numerous than those totaling 3800 on March 1, 1938.

Well Completions and Crude Oil Production Lower in 1939 Than in 1938

STATE OR DISTRICT	*FEBRUARY, 1939, COMPLETIONS AND CRUDE OIL PRODUCTION Total Wells	Oil	Gas	Dry	Initial Production	Production for Feb.	COMPLETIONS AND PRODUCTION IN FIRST TWO MONTHS, 1939 AND 1938 WELLS COMPLETED 1939: 2 Mos.	1938: 2 Mos.	Percent Change	DETAILS OF 1939 DRILLING Oil	Gas	Dry	Initial Production	BARRELS PRODUCTION 1939: 2 Months	1938: 2 Months	Percent Change
Arkansas	16	9	....	7	5,225	1,486,450	45	36	+ 25.0	33	.....	12	.....	3,072,900	2,601,900	+11.8
California	63	52	1	10	36,708	17,400,400	160	208	— 23.0	130	1	29	.....	36,788,700	42,858,800	—14.2
Colorado	...	...	...	...	...	108,500	2	2	...	1	...	1	210	236,700	252,150	— 6.1
Eastern States	622	406	87	129	80,681	2,678,700†	1,288	630	+ 51.0	803	212	273	.....	5,604,800†	8,059,250	—30.5
Illinois	366	291	6	69	78,793	4,087,600	625	124	+404.0	483	11	131	124,724	8,342,350	.....	.....
Indiana	12	3	4	5	115	.....	23	13	+ 76.8	6	7	10	675	.....	.....	.....
Kentucky	42	13	8	21	1,313	.....	119	117	+ 1.7	53	14	52	4,617	.....	.....	.....
New York	27‡	22‡	3	2	136	.....	82‡	126‡	— 35.0	61‡	16	5	250	.....	.....	.....
Ohio	67	10	35	22	122	.....	146	166	— 12.0	23	79	44	211	.....	.....	.....
Pennsylvania	82‡	64‡	11	7	95	.....	200‡	405‡	— 50.6	164‡	23	13	204	.....	.....	.....
West Virginia	26	3	20	3	107	.....	93	158	— 41.2	13	62	18	157	.....	.....	.....
Kansas	101	72	3	26	95,318	4,129,200	202	339	— 40.6	143	6	53	175,438	8,702,400	10,504,800	—11.7
Louisiana	70	51	3	16	16,906	7,421,750	144	191	— 24.6	99	5	40	33,078	15,564,350	14,953,200	+ 4.1
North Louisiana	24	16	3	5	6,373	1,983,150	55	85	— 35.3	37	3	15	13,424	4,201,050	4,664,600	— 9.9
South Louisiana	46	35	....	11	10,533	5,438,600	89	106	— 16.0	62	2	25	19,654	11,363,300	10,288,600	+10.4
Michigan	87	40	2	45	18,677	1,515,600	178	137	— 30.0	95	4	79	36,716	3,062,500	2,954,000	+ 3.6
Montana	13	11	....	2	698	372,550	18	6	+200.0	14	....	4	781	800,500	809,350	—10.9
Nebraska	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
New Mexico	47	39	4	4	24,025	2,853,350	95	81	+ 6.3	82	4	9	50,119	5,913,000	6,274,500	— 5.7
Oklahoma	129	73	7	49	29,996	12,302,700	299	373	— 19.8	169	19	111	45,521	25,338,850	31,314,950	—19.1
Southeastern States	2	.....	.....	2	.....	.....	2	5	— 60.0	.....	.....	2	.....	.....	.....	.....
Florida	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Alabama	1	.....	.....	1	.....	.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....
Mississippi	1	.....	.....	1	.....	.....	1	5	— 80.0	.....	.....	1	.....	.....	.....	.....
Texas	1,023	735	16	272	667,012	37,366,650	1,874	2,105	— 10.9	1,396	46	432	.....	77,899,250	76,486,700	+ 1.8
East Texas Field	76	75	....	1	323,270	10,730,450	158	419	— 62.3	156	.....	2	.....	22,492,450	26,545,950	—16.0
Rest of East Texas	23	11	1	11	2,770	2,640,800	51	92	— 44.6	24	6	21	.....	5,527,500	5,177,400	+ 6.7
North Texas	119	59	....	60	27,241	2,172,500	224	308	— 27.2	137	1	86	60,221	4,661,250	3,959,300	+17.7
South Texas	235	166	4	65	70,363	7,038,900	486	424	+ 14.6	348	13	125	134,488	14,394,850	13,054,800	+10.3
Corpus Christi Area	105	88	3	14	58,474	.....	215	175	+ 22.8	176	9	30	114,629	.....	.....	.....
Laredo Area	90	60	....	30	10,269	.....	196	180	+ 8.9	140	3	53	17,527	.....	.....	.....
San Antonio Area	40	18	1	21	1,620	.....	75	69	+ 8.7	32	1	42	2,332	.....	.....	.....
Texas Gulf Coast	107	81	4	22	25,925	6,124,500	260	248	+ 4.8	195	14	51	33,569	12,789,550	11,145,150	+14.7
Texas Panhandle	29	27	1	1	10,586	1,724,550	58	144	— 59.7	51	5	2	20,747	3,713,200	3,922,550	— 5.3
West Texas	166	141	....	25	136,113	5,920,800	335	434	— 22.8	295	1	39	260,787	12,369,000	10,955,700	+12.9
West Central Texas	33	9	2	22	381	857,950	67	36	+ 86.0	24	2	41	1,150	1,795,250	1,725,850	+ 4.0
Utah	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wyoming	6	5	1	....	4,784	1,557,700	14	10	+ 40.0	9	1	4	4,857	3,079,100	2,822,350	+ 9.1
Total United States	2,179	1,493	124	562	980,030	93,270,300	4,321	4,602	— 6.1	2,974	298	1,049	1,155,316	194,394,550	199,891,950	— 2.7

* February completions cover not the calendar month, but the four weeks, or 28 days ended February 25. ‡ Includes water-input wells. † Not including Illinois.

Condensate Wells—Completion and Recycling Operations

By E. V. FORAN and P. C. DIXON
Parker, Foran, Knode & Boatright, Consulting Engineers

PREFACING their remarks with a brief account of the more important factors involved in present day practice of what is termed "recycling operations," the authors state that the occurrence of deep condensate-type producing horizons offers to the industry an opportunity for study wherein new methods of development and practice may be applied to the end that remarkably efficient recoveries of the reservoir products may be obtained. The products in the reservoir, at the time of discovery, exist entirely as a stable gas and become unstable only under declining pressures, in which case, it is observed that a portion of the reservoir gas products condense as a liquid, either in place or in transit toward the well bore, and as liquids become unrecoverable. This fact requires that operations dealing with this type of reservoir will of necessity be foreign to that of ordinary gas-pool operations.

The authors state that by maintaining initial reservoir pressure, all of the products can be produced without condensation taking place within the reservoir, thereby permitting recoveries possibly as high as 90 percent of the total reservoir content, with one tenth the number of wells as required for drainage under conventional operations.

This paper was presented at the Spring Meeting of the Southwestern District, American Petroleum Institute Division of Production, San Antonio, Texas, March 17, 1939. The statements and opinions expressed herein are those of the authors, and should not be construed as an official action or opinion of the Institute, nor of this publication.

IN November, 1932, before the A.P.I. members, assembled in annual convention at Houston, Doctor William N. Lacey, in his discussion of a paper[1] there presented, stated that " * * * at high pressures, liquids have higher vapor pressures than is ordinarily the case. At considerably higher pressures, such as 3000 or 4000 pounds, * * * that effect is quite marked. Liquids which ordinarily have fairly low vapor pressures have relatively high ones under these conditions. * * * that under these conditions, about 185 degrees temperature and 3000 to 4000 pounds pressure, the upper zone (Big Lake field) with its white oil is existent in the formation in the gas phase entirely." This statement startled some of those present because it was contrary to the well accepted knowledge of the laws of physics when dealing with wet hydro-carbon gases in the relatively lower pressure ranges (500 to 800 pounds). It required several years to appreciate the significance of this statement as applied to the single-phase type high-pressure pools under discussion in this paper.

The retrograde phenomena, as Doctor Lacey stated at that time, was not new to science, but it remained for the very able research staff of A.P.I. Project 37 to finally publish a primer of the work in 1933[2] and to continue the dissemination of valuable scientific data on the subject from time to time thereafter. As was forecast by Dr. Lacey in 1932, the "water-white oil" present in the gas cap, overlying and in permiable contact with the dark oil in the Big Lake field in West Texas, was entirely in the gas phase in the reservoir. Since that time, as the drill has penetrated deeper in other parts of the state and in other states we have come to accrue an enormous reserve of this material, the production and processing of which has presented new problems to the industry. Present in the gas phase by virtue of the original reservoir pressure and temperature, it has been necessary to evolve a plan, which the industry has chosen to call recycling, in order to preserve the pressure while effecting recovery of these liquefiable reservoir contents. To be economical, the extent of re-compression of the residue gas had to be minimized and so the industry has developed new processes whereby liquid recovery is made at pressures that were formerly confined to laboratory practice.

Terminology

Terminology to suit this new phase of the production industry has been slow of formulation. Often referred to in the past as water-white oil, the product obtained from these wells was later called distillate, or sometimes condensate, and the wells themselves were known as water-white, distillate, or condensate wells. The term water-white we now recognize as erroneous in the general sense, for not all of these vapor-phase mixtures condense to yield a water-white or colorless liquid. The name condensate has found frequent usage of late but it is often awkward in our customary phraseology. It would seem that distillate is a very proper name since the material is present in the gas phase probably due to the process of retrograde vaporization, and truly either the recovered product or the liquefiable material in the vapor phase is a distillate. Of late, occasional reference is made to distillate wells as "combination wells," but to name a well "combination well" is definitely erroneous if

the reservoir material is of a single phase. The name was coined by the Bureau of Mines to properly describe a well in which the reservoir material was predominantly gaseous although definitely two phase.

Definitions

Retrograde pressure condensation is a process wherein a condensate is procured by pressure reduction at constant temperature; retrograde pressure vaporization is the reverse of this process. Retrograde temperature condensation is a process wherein a condensate is procured by temperature increase at constant pressure; retrograde temperature vaporization is the reverse of this process. Current literature is sometimes vague in referring to the retrograde phenomena and not infrequently definitions set forth are erroneous. Normal condensation resulting from temperature drop is not a retrograde phenomena even though it may occur at pressures within the range wherein the phenomena of retrograde pressure condensation or vaporization is observed.

Past History

Methods of recovering distillate from gas at relatively low pressures were well known prior to 1934.[3] Early in 1935 it became necessary to commence deep gas lifting of dark oil and salt water from the 8800-foot horizon at Big Lake, the gas being obtained from the 8200-foot or upper water-white horizon. It was desirable in an operation of this sort to minimize the degree of compression of the lifting gas, which mechanically of itself offered no difficulties, a single-stage 2000-pound-working-pressure compressor being used and operated at intake pressures up to 1200 pounds and discharge pressures of from 1400 to 2000 pounds. During the course of these operations many interesting observations were made concerning the recovery of distillate at high pressures. Hydrate freezing was encountered in the compressor discharge lines and this trouble was overcome by following the example of Oklahoma City operators by lubricating alcohol and other materials into the lines. Observations were also made of the effect of temperatures and pressures on the recovery of the "water-white oil."

The success of these high pressure operations practiced at Big Lake was so impressive that early in 1936 preparations were made for the construction, in the Agua Dulce field, of the first distillate recycling plant in Texas. Today there are several distillate recycling plants in operation, most of them making recovery by means of condensation due to retrograde pressure and normal condensation, and so properly called "condensation" plants. Operating pressures in these plants are reported as high as 2800 pounds and input recycling pressures as high as 3600 pounds.

Present Status

Currently considerable interest is being evinced in this work, additional recycling operations being planned in several fields. A recent order by the Texas Railroad Commission has done much to stimulate this activity, shutting in those wells which have heretofore been wantonly blowing gas to the air, and thus assuring operators that reservoir pressures will not be allowed to abruptly decline and precipitate in unrecoverable condition the very product presently anticipated as a recoverable reserve.

Production and Recycling of the Gas

A distillate or condensate well, to use oil-country terminology, is in reality a gas well; the contents of the reservoir from which the well produces is entirely gaseous until it undergoes change of pressure or temperature. The pressure drop obtained when flowing one of these wells will be, as a minimum, the difference between bottom-hole and closed-in well-head pressure. The temperature drop is variable and depends upon the establishment of an equilibrium condition wherein the ground surrounding the well bore continually absorbs a constant quantity of heat, the flowing well-head temperature being as a minimum approximately 40° F. cooler than the reservoir. Most distillate-bearing gases are individually peculiar in their reaction to changes of temperature and pressure, and for given conditions the amounts of condensate will vary, but they all share the common characteristic of issuing from the well head partly in the liquid phase.

It is advantageous to deliver the raw well effluent to the separator or processing plant at a pressure substantially equal to the shut-in well pressure, so that pressure drop to the processing pressure may supply a portion of the necessary process cooling. For this reason the well should be completed and later produced in such a manner that the pressure drop, measured as the difference between casing and tubing pressure, may be as low as 50 pounds per square inch when the well is delivering, for example, ten million cubic feet of gas per day.

In order to properly minimize the flowing pressure loss it is necessary to set large casing on top of the producing sand and to complete the well with a liner and screen through the producing horizon, if the horizon is unconsolidated, or with an open hole if the horizon is consolidated. Gun perforations have been found unsuited for proper completion of distillate wells. The low potential of many wells completed by gun perforations has been assigned to the facts that only a limited area of sand is exposed for production, that the penetration of the bullet may possibly compress and so materially reduce the effective permeability of the formation about each shot hole, and that by setting and cementing pipe through the productive horizon a small amount of squeeze cementing may take place to reduce the effective formation thickness. One type of efficient completion in an unconsolidated formation is to set the casing on top of the producing horizon, drill into and under-ream the pay and set a screen with gravel pack.

Tubing is installed in output or recycling input wells for two reasons: First, to provide a syphon string to produce liquid condensate, and second, to provide the normal and necessary means of access and control of the well. Under normal operation, flow from output wells is taken from the casing, periodic condensate removal being accomplished by closing in the casing and flowing through the tubing, which is set close to bottom. The size tubing to be used should be carefully considered for each installation; several factors will enter a proper consideration.

It is well at this point to clarify a fact that seems to be rather generally misunderstood. Since all distillate wells produce a two-phase product at the well head they have been held by some to be oil wells; they have even been described as having varying gas-liquid ratios under varying flow rates, which at first thought, would appear to be proof of a two-phase material in

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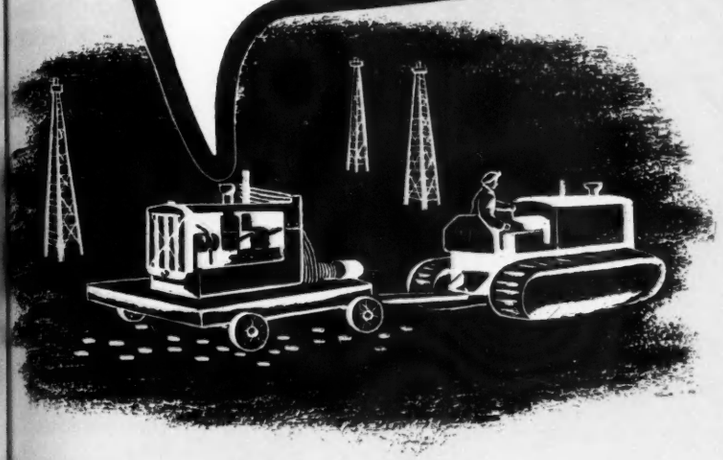

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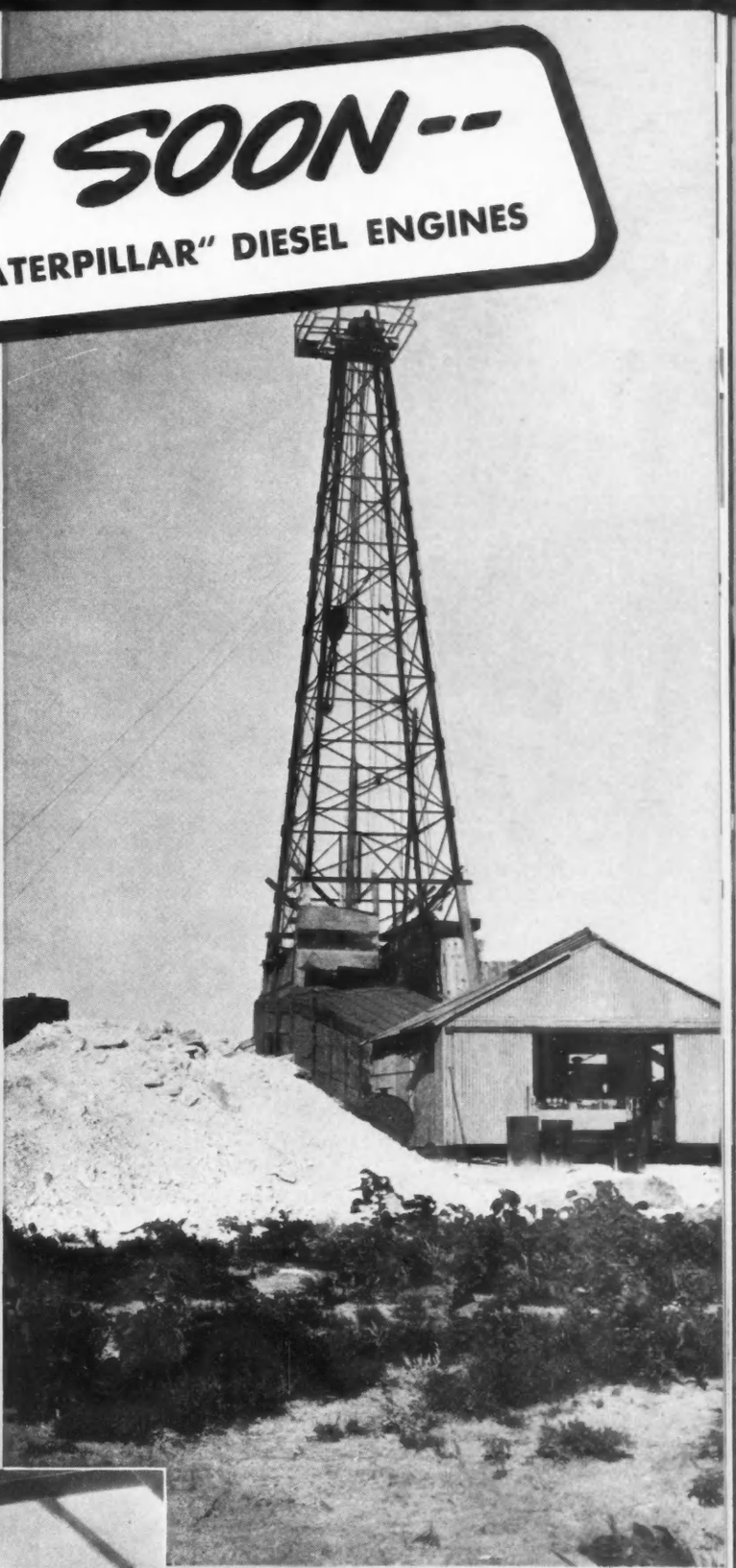

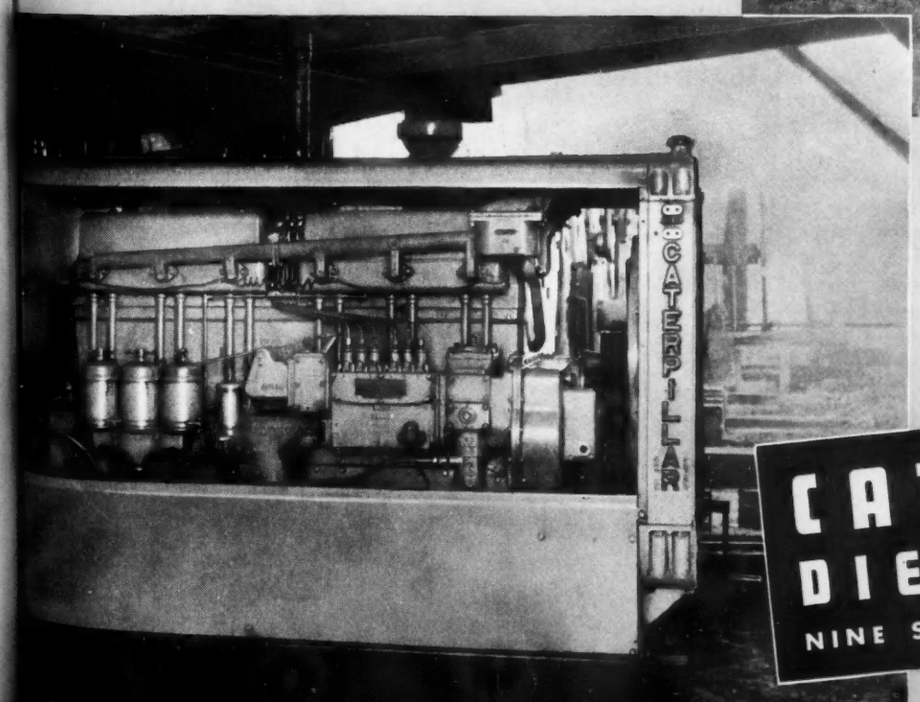

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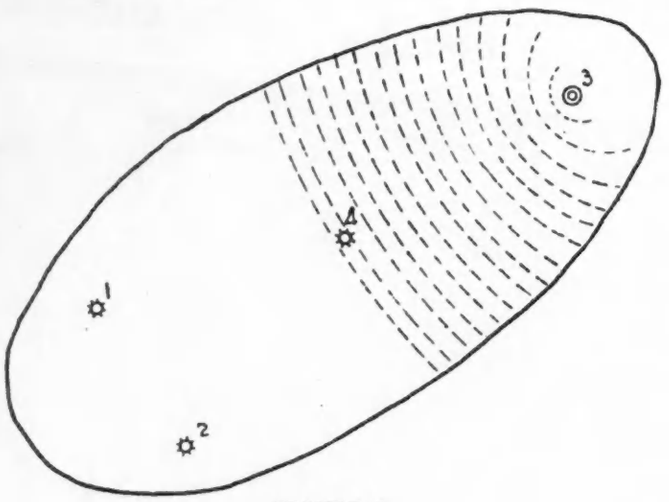

FIGURE 1
Recycling Well Pattern

the reservoir. If a true distillate-bearing gas is produced into an efficient separator at constant conditions of temperature and pressure, the gas-to-liquid ratio will remain constant, regardless of the rate of flow, but providing that the velocity of the gas through the tubing or casing at the minimum rate of flow is sufficient to insure at all times a steady or nonfluctuating production.

It is possible by mechanical means, such as bottom-hole chokes, or by changing the rate of flow to vary the gas-liquid ratio of the well-head product; but these changes in no way affect the true composition of the well stream or of the single-phase material entering the well bore, providing, of course, that the well is not flowed at such a great rate as to cause condensation of material in the reservoir before reaching the well bore. The phase composition of the total material issuing from the well head will vary with the particular conditions of temperature and pressure which exist at the moment. The composition of the composite material, however, will remain unchanged, although analysis is impossible of more than approximate determination except by separation of the entire flow stream into gas and liquid phases for separate determinations of composition and proportion.

The process of condensation which has been described as taking place while in transit within the well is continued in the flow line from the well to the processing plant. Flow lines may well be generously proportioned to minimize pressure loss for the same reasons as cited for minimizing pressure loss by proper well completions. Flow lines may be set on piers above ground to minimize corrosion, but in so doing provision must be made for expansion and contraction movements and the plant process must be flexible enough to compensate for the great differences of incoming gas temperature. Cooling devices may be installed in flow lines between the processing plant and the input well to remove part of the heat of compression and so reduce friction pressure loss, or to achieve the same results, the lines may be telescoped. The design of flow lines is a matter of exact economic determination, balancing the cost of incoming lines against the cost of cooling capacity and the cost of outgoing (input) lines against the cost of compressor capacity.

Input wells are completed in the same manner as output wells and for the same reasons. Experience indicates that the pressure drop between well-head and bottom-hole pressure will be the same on a properly completed input well when returning gas to the formation as it would be if the flow were reversed and the well converted to an output well. It is of greater importance to secure good input wells than it is to secure good output wells because, first, it is usually cheaper to purchase cooling than it is compression, and second, the output wells will ordinarily outnumber the input wells and so be called upon to pass less gas.

Development Pattern

In a recycling project all of the wells should be located to conform to a carefully planned pattern. Consider the mechanics of the recycling operation illustrated in Figure 1 and assume for the moment that the structure has been defined possibly by deeper drilling for oil. Assume further that a study of available reserves and other data indicate the advisability of constructing a recycling plant of 30 million cubic feet daily capacity. Wells No. 1 and No. 2 are planned to be completed and operated as output wells, returning the denuded gas to the formation through Well No. 3. In such an operation, assuming continuity of formation and reasonably uniform permeability, the recycled gas would travel in the formation somewhat as pictured by the dotted lines and would displace en-masse the original reservoir contents toward the output wells. By such an operation maximum recovery may be made before the lean displacing gas commences a second cycle. If a third output well (Well No. 4) were to be located as shown, the displacing gas would begin a second cycle via Well No. 4 at a time when less than one half of the available reservoir contents had been processed. Obviously Well No. 4 in this example would not be properly located and would of necessity be relatively short lived.

A knowledge of the geology of the producing horizon may be of utmost importance to minimize the isolation and loss from circulation of portions of the reservoir gas. Such knowledge will necessarily be limited in proportion to the number of wells drilled, but all available information should be utilized to the fullest extent.

Competitive recycling operations in the same horizon must be carefully planned in order that maximum benefits may accrue to all operators. The recycled residue gases do not "mix" and so dilute the remaining rich gas, but rather they move and displace en-masse the original reservoir material in proportion and toward the zones in which pressure gradients exist. For example, competitive operations where the gas movement is in opposing directions will prove mutually disadvantageous.

Processing

It has been pointed out that distillate-bearing gases precipitate a

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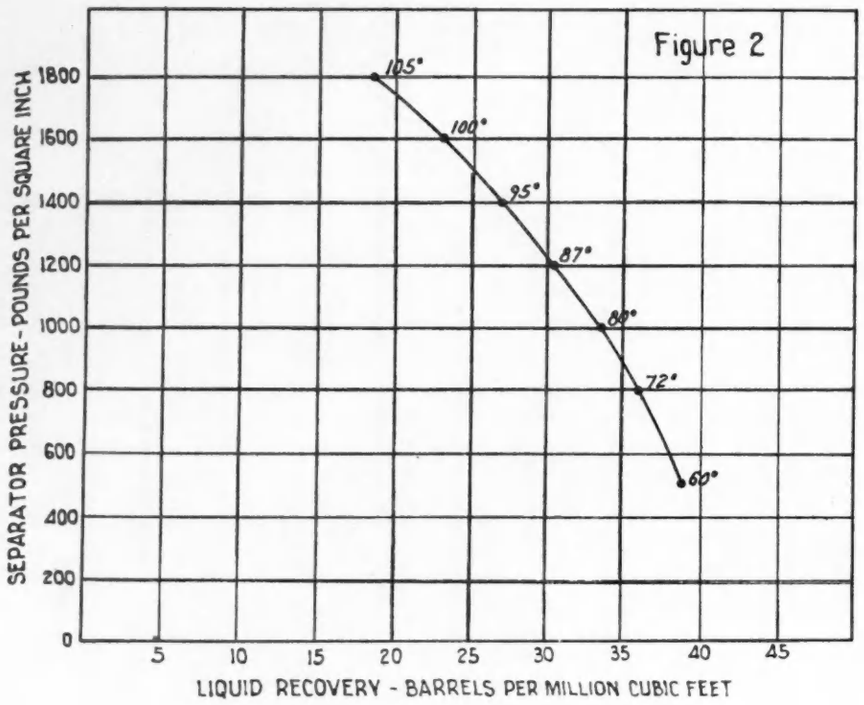


FIGURE 2

Graph showing combined effect of temperature and pressure reduction on liquid recovery

liquid condensate when either or both the reservoir temperature and pressure are lowered from their original conditions. It is natural then that the first method of processing involved simple expansion of the well head product into a low pressure separator and disposition of the gas, in most cases, by venting to the air, and in no cases by return to the reservoir from which it came. This method of production has been largely eliminated by conservation orders, for it precludes economic return of the denuded gas to the formation. In addition, this method as a rule implies a short sighted production policy, for retrograde pressure condensation within the reservoir may cause irretrievable loss of approximately 50 percent of the original condensable reserves.

It was early known that normal condensation brought about by temperature reduction would be an important factor in high-pressure distillate recovery, in fact experiments as early as 1935 indicated the curve characteristics such as shown in Figure 2. The practical limit of application of temperature condensation may not be the same for two distillates, the limit being established in part by the sharp break in the recovery curve, such as is indicated in Figure 3. This break indicates, for any constant temperature at which the tests are run, the point at which the opposing force of retrograde pressure vaporization becomes the major con-

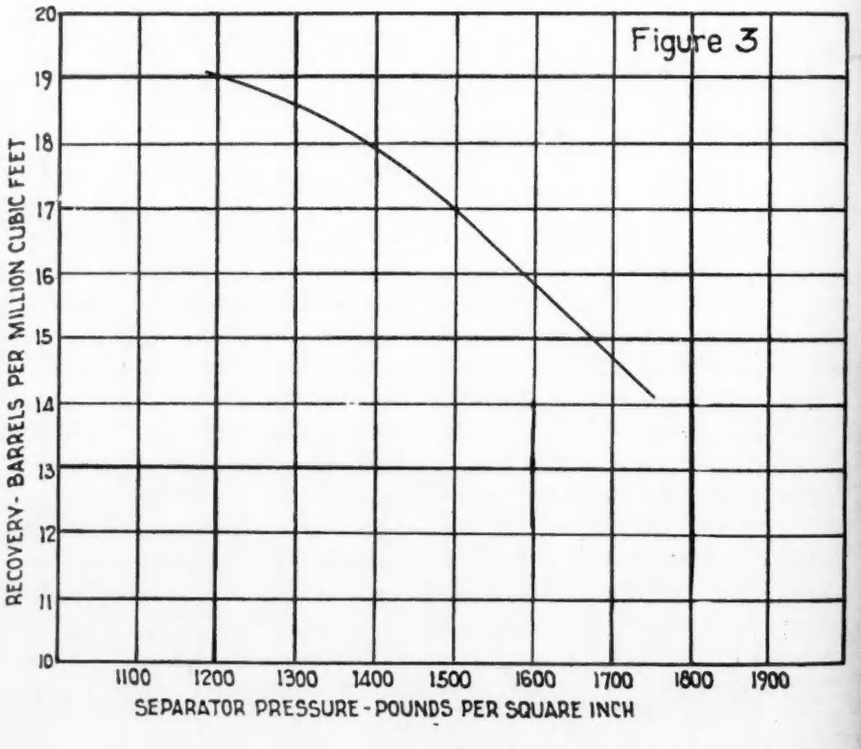
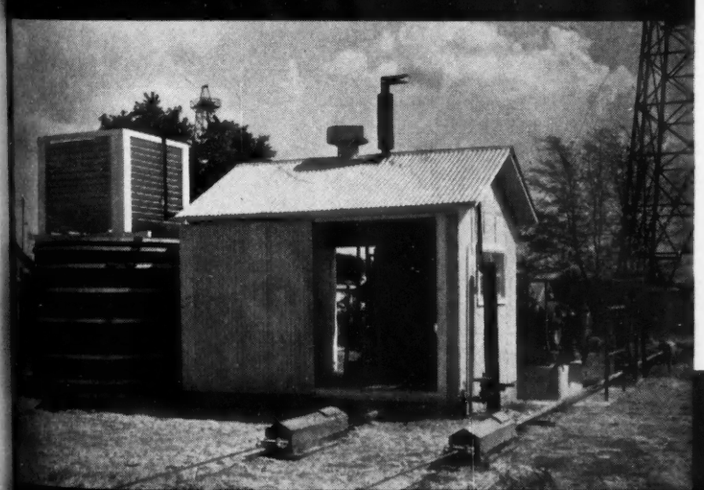


FIGURE 3

Graph showing effect of pressure on separation recovery, temperature constant 60 degrees.

A National Concentric Crank Four-Well Hook-Up with 2 National Type H Back Crank Pendulums and a National Type H-7 Reduction Gear—Location, Fitts Pool, Oklahoma.

A National Three-Well Hook-Up with National Type SH-801 Beam and Post Assembly and Type H Pendulum—Location, Central Oklahoma.



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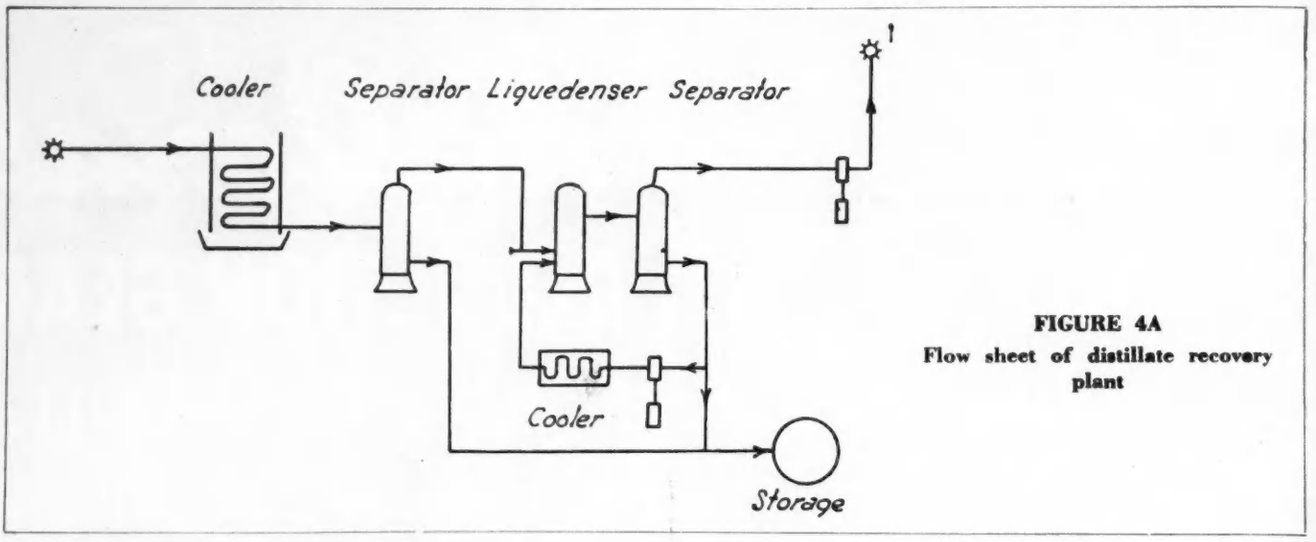


FIGURE 4A
Flow sheet of distillate recovery plant

trolling influence in condensation.

Maximum distillate recovery by retrograde pressure condensation alone would, of course, be made at the base of the retrograde pressure condensation range (approximately 700-800 pounds). On the other hand it is not possible to make commercial recovery solely by retrograde condensation, because the operation of pressure reduction results in a corresponding temperature reduction, and the forces at work to cause liquefaction are both retrograde pressure and normal temperature condensation. As the pressure is reduced below the base of the retrograde pressure condensation range it causes increasing amounts of cooling per pound of pressure drop and the normal condensation caused by temperature reduction is greater than the opposing force of vaporization by pressure drop below the retrograde range. This explains the reason why, by expansion through a choke, maximum separator recoveries are made at pressures of approximately 400 to 500 pounds. Since it is not economic to reduce pressure to the point where this maximum recovery may be had, or even to the base of the retrograde pressure condensation range, only part of the retrograde condensation forces are utilized and, as compensation, temperature condensation is proportionally increased by artificial cooling. One process employing this principle operates at pressures of 1200 to 1400 pounds and temperatures of approximately 40° F. The heavier the distillate being processed the higher the pressure at which this process is able to operate, the pressures cited being employed to effect recovery of material that is substantially motor fuel. A process of this type is properly called a Condensation Process, and is distinguished from the well known Absorption Process which employs, at the higher pressures, a special type of absorption oil.

Condensation Process

Two very generalized process methods which make distillate recovery by condensation methods are shown in Figures 4A and 4B. One possible application of the process indicated in Figure 4A gathers the gas from the output wells at a plant header, cools the gas by means of heat exchange with cooling water and separates the resultant liquids from the gas. This step in the process makes possible the recovery as a liquid of up to 90 percent of the total freshwater vapor that is naturally present in all distillate-bearing gases. Water vapor, being very susceptible to temperature condensation alone, may be removed to a large extent by separation even at well head conditions of temperature and

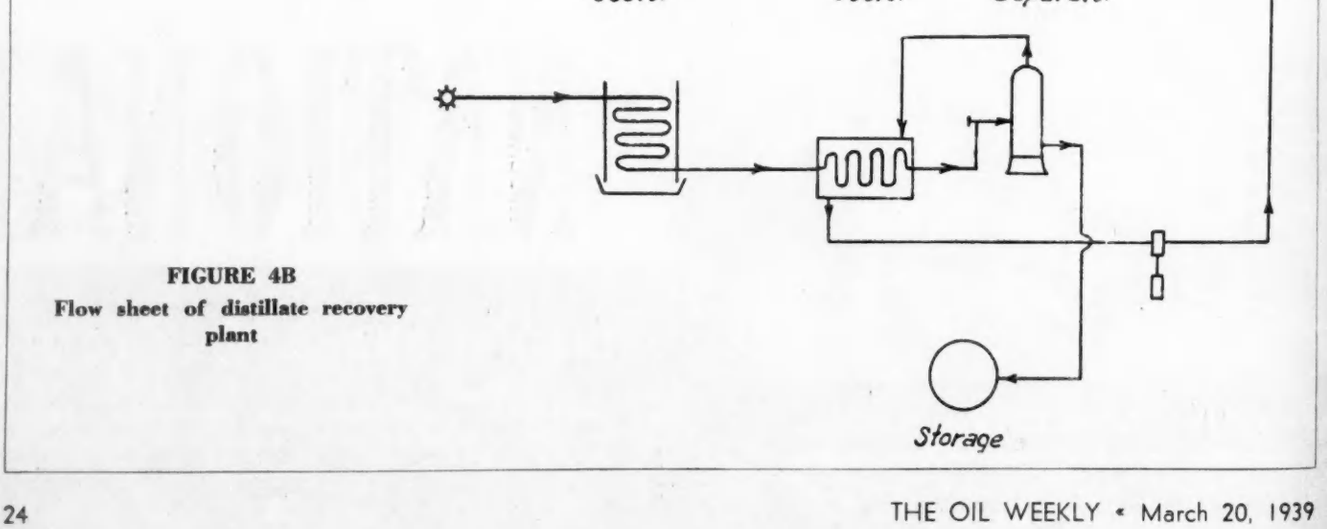
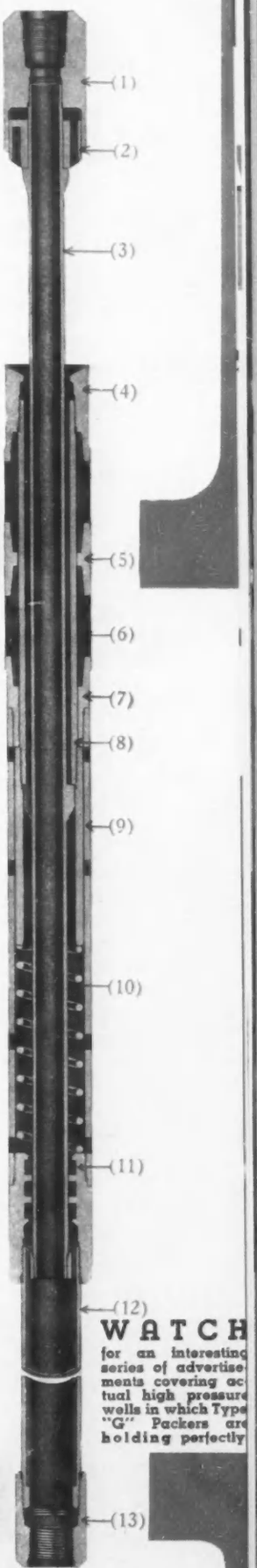


FIGURE 4B
Flow sheet of distillate recovery plant

CAMERON ANNOUNCES A NEW PACKER

Type "G"



It's a CIRCULATING, anchor type packer. Set it by slacking off a fraction of the tubing weight. Simple, uncomplicated, positive.

It seals positively between casing and tubing . . . under the highest well pressures (6500 lbs. bottom hole pressure at Labelle, Jefferson County, Texas, for example!).

It seals positively at the VALVE, which is fitted with a Cameron SELF-FEEDING PACKING ELEMENT.

Designed to provide a simple, uncomplicated means of making a pressure-tight packoff between tubing and oil string on deep wells, and thus relieve the oil string of all pressure at the surface, the Cameron Type "G" Packer has proved conspicuously successful. It has also proved extremely satisfactory in making successive production tests of different sands through perforations.

Seal between tubing and oil string is effected by lowering the tubing string until valve packer (2) contacts valve seat (4). Tubing is further lowered until approximately one-half the weight of the tubing string is on the packer. Packer is spaced at the desired point in the oil string by the use of spacer-pipe of the required length. Spacer-pipe may include either liner and screen on permanent packer setting, or perforated pipe for production tests. After packer has been set by letting down approximately one-half of tubing weight, seal between tubing and casing may be tested by introducing full pump pressure in the oil string.

Principal parts of the Type "G" Packer are as follows: (1) Valve cage; (2) Valve packer; (3) Flow pipe; (4) Valve seat; (5) Packer spacer; (6) Packers; (7) Packer retainer; (8) Mandrel; (9) Lower sleeve; (10) Spring; (11) Seal rings; (12) Drive nipple; (13) Reducing coupling.

Detailed operation of the Packer is as follows: (1) Correct amount of spacer-pipe is made up and run in oil string. (2) Packer is made up on spacer-pipe. (3) Tubing is made up and packer run in hole until bottom of spacer-pipe contacts bottom of hole. (4) Well may now be washed the desired amount. It will be noted that a large opening is provided through the extra heavy flow-pipe for free passage of wash-water. A series of holes drilled in the lower sleeve permit returns to pass through the tool, and out at the valve seat. This minimizes back-pressure on pumps and eliminates tendency of the packer to set itself due to pump pressure. (5) When washing operation is completed, lower tubing string until valve packer contacts valve seat. Particular attention is directed to the fact that valve packer is designed with a self-feeding Neoprene sealing element, assuring a pressure-tight seal even though valve seat may have been cut during washing operation. (6) Approximately one-half the weight of tubing string may now be lowered on packer. Tubing weight is transmitted through valve packer to valve seat. Valve seat moves downward and expands both Neoprene packers. (7) To test seal of packer, introduce full pump pressure in oil string. If pressure does not lower, packer is holding tightly. If pressure lowers gradually, this indicates that valve has not sealed, due to trash. Tubing should then be raised until valve packer is above valve seat. Three or four strokes of the pump will clean trash from valve seat, and packer may be reset and tested.

Part No. 3, Flow-pipe, is keyed to Part No. 12, Drive Nipple, so that should it be desired to pull tubing and packer, packer flow-pipe may be rotated to the right with tubing to get loose from spacer-pipe, should this be sanded up. A combination right and left hand coupling may be used below reducing coupling to insure backoff.

Cameron Type "G" Packers are serving effectively in deep wells having bottom hole pressures as high as 6500 pounds. Due to the absence of complicated slip mechanisms, "J"-tool mechanisms, etc., Cameron Type "G" Packers may readily be pulled from the hole on tubing string at any time.

Cameron Type "G" Packers are made in sizes to run on 2" or 2½" tubing to seal in all sizes of casing from 5" O.D. to 7⅝" O.D. Special sizes of packers may be obtained on order. Any desired special data or information pertaining to this tool will gladly be furnished on request.

WATCH

for an interesting series of advertisements covering actual high pressure wells in which Type "G" Packers are holding perfectly

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pressure. Upwards of 50 percent of the recoverable hydrocarbon liquid will be condensed and separated in this preliminary step, which for obvious reasons is carried out at a temperature in excess of that at which hydrates will form in the flow stream. Following this preliminary cooling and separation, the gas is passed through a choke into a "liquedenser," where it is contacted with a cold stream of previously recovered condensate. Construction of the "liquedenser" is such that this cold condensate reflux suddenly cools the full flow stream, agglomerates and makes ready for separation all of the liquids, and removes the water vapor in the form of hydrates. Liquid recovery is made in a second separator from whence part of the liquid is recirculated through the cooler and into the "liquedenser" and part is withdrawn to storage. Another process of similar general characteristics uses a cold hydroscopic liquid in the circulation system instead of a portion of the cold recovered distillate.

One application of the process indicated in Figure 4B gathers the incoming gas at a plant header, flows this gas through water-cooled heat-exchange coils, then through gas-cooled heat-exchange coils, and through a choke and into a separator where all the recoverable liquids are separated. The cooled gas from the separator is counter flowed through the heat exchanger to be the cooling medium for the incoming gas and is then discharged to the compressor suction. A system of this type must operate at or above the temperature at which hydrates form, or cause the process to be cyclic for hydrate thawing. The method of gas heat exchange is, of course, limited as to the minimum attainable temperature; cooling done in this fashion is at the expense of compressor capacity and as such its economic advisability may be readily determined. One plant using this flow scheme is operating at 1200 pounds and approximately 70° F. to recover distillate with an end point of approximately 510° F.

Oil Absorption

The oil-absorption plant has not been shown by sketch because with but minor exceptions it resembles the modern intermediate - pressure plant. A great deal of experimental work has been done to determine the probable limits of operating pressure of an absorption plant, in that apparently, aside from the economics of the plant itself, operation depends largely upon obtaining a suitable absorption oil. One such plant is not yet in full operation but it has successfully processed a distillate gas at an operating pressure of approximately 1200 pounds. Since this form of processing is still somewhat in the experimental stage it can not be properly reported here. It is anticipated, however, that suitable disclosures of this new development will be made during the year.

General Processing Problems

Many problems involving technique and practice have been solved during development work on the condensation processes, a few of which are mentioned here as being of general interest. Controlled stage separation has been effected as a means of fractionation and color control, controlled rate of well flow has been utilized for the same purposes; calculation of the super compressibility of metered gas has been verified by plant-scale test; hydrate formation has been studied and methods developed wherein its objectionable formation has been eliminated; test methods have been developed that provide excellent means of establishing plant control, other test methods have been developed whereby a strange distillate-bearing gas may be subjected in the field to plant conditions of recovery and the plant recovery forecast to within 2 percent.

The importance of compression ratio, or its equivalent, compressor horsepower, can hardly be overemphasized. In some processes the cost of the compressor installation for recycling the residue gas exceeds the cost of the balance of the plant. Two processes, one operating at 1000 pounds pressure and the other operating at 1250 pounds pressure, and both recycling at 1800 pounds, would seem to the layman to be quite similar. Actually, a compressor in the second process will handle 50 percent more gas per horsepower than a compressor in the first process. An excellent analysis of cost data on compressors and compressor operation has recently been made available and it is recommended to the attention of the industry in connection with this work.[4]

Reserves

Distillate reserves in place in the reservoir may be readily calculated by present methods. Such reserves, on an acre-foot basis, will naturally be much lower than the customary liquid oil reserves of similar reservoirs.[5] The percentage of reserves which may be recoverable will depend in a large measure on the well pattern and to a lesser extent on the reservoir characteristics.

Development Policies

Few leases are of sufficient size and under one fee ownership to make recycling operations possible without unitization or other forms of adjustments not provided in the original lease. Unitization of all leases on a structure, or operating agreements between all parties engaged in recycling projects on the structure will, of course, lead to more efficient and profitable recovery for the field as a whole. Problems such as these in the interest of operating economy should of necessity be solved before commencing operations, because, as might be expected of such a new and radical departure in practice, there is as yet insufficient experience to indicate well established policies of procedure.

Conclusion

Tomorrow's production cost will be higher, because tomorrow's well will be deeper and more expensive. Acre-foot reserves in place may be less, for the reservoir material in place may be predominately gaseous. Recycling in such a reservoir may offer the only satisfactory method of operation in that it will probably approximately double the recoverable reserves, and divide by ten or more the number of wells required for drainage. A substantial foundation has been laid for this fledgling phase of the production industry and with our experimental work behind, the future seems to promise a steady development based upon sound engineering analysis and experience.

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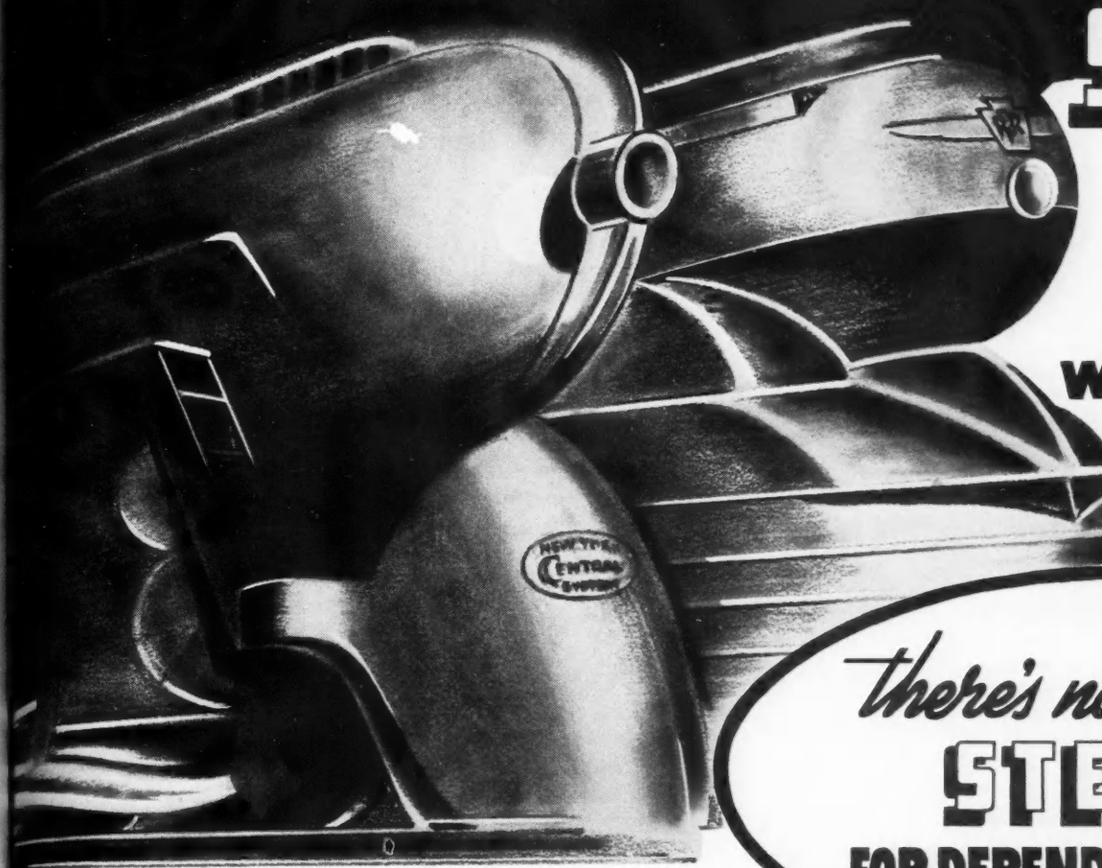

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Recovery of Condensate From Distillate Wells

By EMBY KAYE
Tide Water-Seaboard Oil Companies

IN the natural gasoline industry the art of recovering gasoline from casinghead gas progressed from cut and try methods several decades ago to one of the most technical phases of the oil industry. It was metamorphosed from a "scavenger" business, manufacturing a product of accidental composition and of questionable utility, into a coordinate branch of the industry producing a variety of products of precise specifications, having definite value and utility.

Like the production of natural gasoline, the recycling of gas in distillate pools is an affiliated producing enterprise. The recycling operation is considered mandatory, not only to prevent the waste of gas but is the only means known in the present development of the art by which substantially all of the condensables in the reservoir can be recovered. Already methods have been developed to recover the condensate more efficiently than in the past. Recent technological advances, together with plants in operation or under construction, point the way to further improvements to the end that waste will be reduced or eliminated in a phase of the industry which is already producing more condensate than is manufactured in all of the natural gasoline plants in the country.

Extraction efficiency of the order of that obtained in natural gasoline plants may be anticipated.

Presented at the Southwestern District A.P.I. Division of Production meeting, San Antonio, Texas, March 16-17, 1939.

THE increasing number of so-called gas-distillate fields which have been developed in the past few years has brought a challenge to the industry. It was quite obvious that the several states would not long tolerate the waste of gas in order to permit the production of a few barrels of distillate. In Texas the regulatory authorities have already prohibited the production of gas distillate[1] wells where the producer has no market for his gas in accordance with the conservation laws of the state. The market for gas for legal uses is rather limited, considering the supply and demand, and this fact restricts the output of distillate with the result that the well owner had a "white elephant" on his hands. Where a market was available or where the producer otherwise was "permitted" to produce his wells, the practice generally employed was to drop the pressure at the separator from the well-head pressure to a range of 250 to 500 pounds, or thereabouts, the distillate production representing what happened to drop out in the separator. In some cases that pressure was employed which gave the best results, that is, produced distillate with the lowest gas ratio, while in others that pressure was maintained on the separator which was required to deliver the gas into a service or pipe line. In either case the gas may or may not have been processed for extraction of the remaining gasoline therein.

Not infrequently conservation laws are actually designed to conserve valuable natural resources. But the regulations which prevent the waste of gas as such from a distillate well or pool do more than that. They prevent very largely the waste of distillate in the formation by preventing relatively rapid pressure decline in the formation.

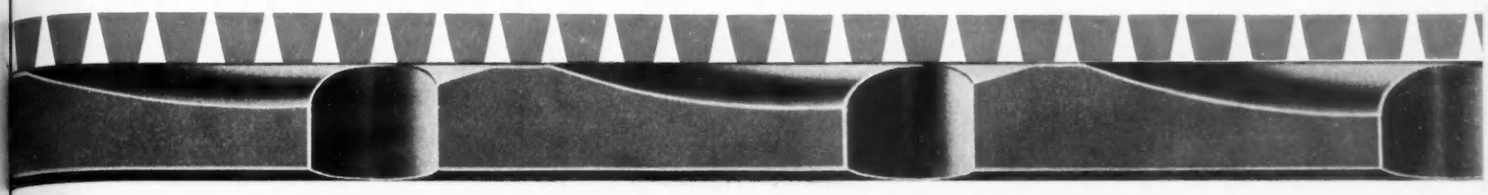
It has been shown that the liquefiable hydrocarbons are in one phase with the gas just above their dew points and that only a slight drop in pressure will result in the condensation of the heavier constituents in the formation, doubtless never to be recovered as Patten[2] has found and as Foran[3] has reported. The saturation in the formation is too low to permit the condensed fractions to accumulate in sufficient volume to flow to the well bore. There is hardly more than enough liquid to cover the face

[1] Single phase in formation.

[2] Patten and Denny C. Ivey—*The Oil Weekly*, 12-12-38; *Rig & Reel*, March, 1938.

[3] E. V. Foran, "Development and Production Problems in High-pressure Distillate Pools." *Petroleum Technology*, Vol. 2, No. 1 (Feb., 1939.) A.I.M.M.E.

DIRECT CONTACT



- There are no gaps or waste space between wire openings and pipe perforations on Layne Screens. The wire is wrapped directly onto the pipe.

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of the sand grains. Mr. Patten's classic example of this form of waste within the reservoir is the La-Blanca field where the pressure drop from 3800 pounds to 2180 pounds[4] has reduced the recoverable condensate from 9 barrels to a million cubic feet to 2.6 barrels. Moreover this distillate content is now so low that for practical purposes we might assume that all of the condensate is unrecoverable economically.

The Development of Recovery Processes

Both the forces of conservation and good economics have motivated the petroleum engineer to find or adapt suitable methods of production which would permit the economic recovery of the liquid hydrocarbons in the gas and not do violence to the principles of conservation. The development of what we have come to know as recycling and pressure maintenance plants fills that need. Whatever the detail, the plants are designed to permit the extraction of the liquefiable fractions in the gas at elevated pressure and the return of the gas to the producing formation without waste where the gas can be stored until it is produced for the ordinary purposes to which dry natural gas is put.

Distillate wells, or wells producing gas containing condensable hydrocarbons which in the light of later experience justifies the conclusion that they were distillate wells, were experienced many years ago, however, the infrequency of their occurrence, or the lack of engineering knowledge, or both, perhaps retarded the development of efficient methods for the recovery of the condensate. Much has been said about the phenomenon of retrograde condensation. It lay on the scientific shelf, very vaguely indexed until it was finally applied in the development of a novel and highly useful process for the extraction of condensate from so-called distillate wells. Many distinguished scientists have explained the mechanics of condensation in the retrograde range, but none more simply and adequately than Buckley[5], little over a fortnight back at the Houston A.P.I. chapter meeting. But the application of the theory to drawing board presented many complications because of the complex mixtures of the gases normally encountered in production.

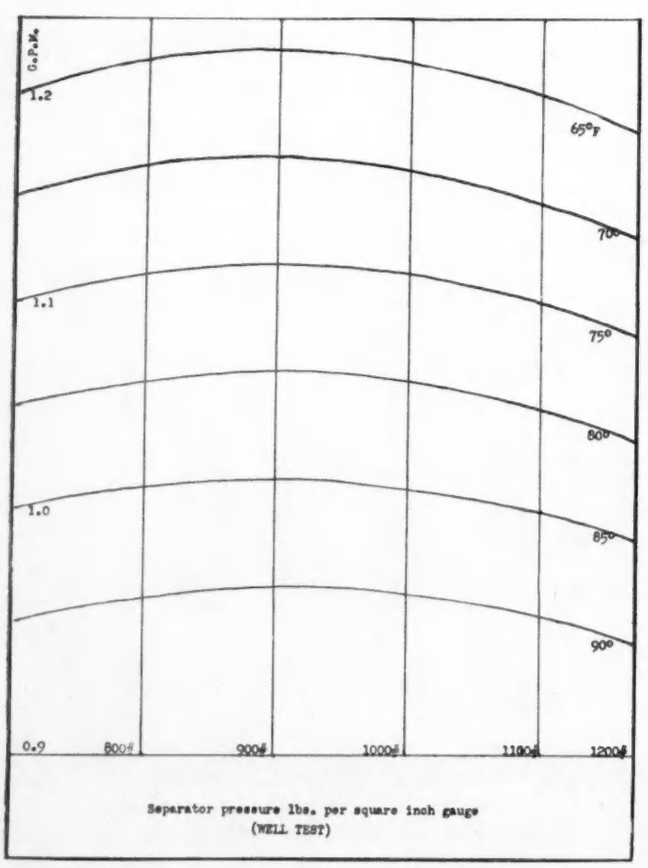
In the design of absorption and fractionating equipment it is quite essential to have a knowledge of the equilibrium composition relation of the liquid and vapor in a complex hydrocarbon system. Raoult's and Dalton's laws have been used to calculate these relations, but it was early found that the deviations in the calculated values from the actual increased as the pressure increased. These deviations were found in some instances to be up to 200 to 300%, thereby making the results valueless.

Investigators in the field who discovered the behavior of gases from distillate wells found among other things (1) that the recovery of condensate increased as the separator pressure was decreased from well-head pressure, but that (2) presently a point was reached where the volume of condensate decreased, and (3) that with different pools and frequently with different wells in the same pool, the pressure at which maximum condensation occurred varied, and finally (4) they found that by cooling the gas increased recoveries were obtained. (Figs. I and III)[6]. It is now well known that this condensation is the result of both normal and retrograde condensation and that the maximum condensation for every mixture of hydrocarbons at a given temperature occurs at that pressure at which the normal and retrograde condensation of the various liquefiable fractions in the mixture reach a maximum. This pressure may be as high as 2400 pounds, although this data is yet to be confirmed. Reducing the temperature at the point of pressure drop has been found to make possible an increase in this pressure without loss of recovery.

Considering the novelty of the art and the engineering problems which had not been thoroughly solved, it was natural that small scale experimental units were built in the field and conditions provided under which results were observed as a basis for the design of the commercial plant. Experimental work provided a great deal of design data. However, much remained to be done as the first plant of Tide Water Associated-Seaboard at Cayuga demonstrated the inadequacy at that time of information relating to exchange, cooling, compressibility and other design data, many of which have been de-

FIGURE 1

Effect of temperature and pressure upon condensate recovery. (First stage separator)



[4] Patten & Ivey report that the original formation pressure was 4200 lbs. and that the distillate production was 18 bbls. to the million.

[5] Humble Oil & Refining Co., A.P.I. Houston Chapter, 2-28-39.

[6] Fig. 3 represents plant tests at Cayuga. End products not uniform except as to gauge pressure.

veloped and made available from observations of the operating plant. This plant has been operated under various conditions of pressure and temperature to develop data as to horsepower, temperatures, yield and the interrelated economics of the whole. This data has been made available to interested manufacturers of equipment used in recycling processes.

Gas-Hydrates

Experimental operation at low temperatures where a high order of extraction efficiency was obtained indicated that gas-hydrates tended to freeze at anything below normal temperatures (60°-70° F.) and that, as pressures were increased, even at higher temperatures. This problem resulted in the use of hygroscopic materials and with their aid temperatures as low as —20° F. were reached in at least one commercial plant. No deleterious results have been experienced in any part of the cycle as a result of this operation.

Factors Affecting Design

Test procedure and equipment have been developed to stimulate plant conditions on the basis of which reasonably close predictions of plant performance can be made from a plant design indicated by these tests and by fundamental analysis of the gas, condensate and residue gas.

Except for one plant which is operating at least in part in combination with the absorption process, recycling plants in general operate on the same principles, to-wit: pressure drop into the retrograde condensation range and cooling with or without dehydration to affect normal condensation. The rest is detail.

The extent of cooling is determined by the nature of the components and the economics of extraction. In some cases the market may determine the extent to which the lighter fractions are to be extracted. It is erroneous, however, to assume that only light ends are produced at higher extraction efficiencies. (Tables 1 and 2.) While this depends finally upon the character of the gas processed, generally both light and heavier ends are extracted with a resultant increase in recovery of savable hydrocarbons. This is particularly desirable where the product is to go directly into motor fuel where the light ends make for volatility and add appreciably to the octane value of the fuel. It is not unduly stressing the necessity for efficient extraction when it is pointed out that operations at Cayuga could not be economically conducted except with relatively complete extraction where temperatures on the order of 0° F. are required. On the other hand, the writer is familiar with at least one plant in the South Texas area where no such temperatures will be required to obtain economically optimum yields.

It is unwise if not equally erroneous to assume with today's uncertain knowledge about the flow of gas in every reservoir that it is not necessary to extract substantially all the salable fractions in the gas because it can later be recovered. Recycling should be planned both as to the well pattern and the extraction process as though the gas will not be processed more than once. Dilution can make the operation, except in the case of very rich gas, as unprofitable as channeling. It would appear to be good business therefore to plan to do a complete job of extraction the first time the gas is handled.

TABLE 1

Plant Operation at 60° in Accumulator

TEST No.	Accumulator Temperature	G. P. M. in Residue
1	60° F.	.4773
2	60° F.	.4838
3	60° F.	.4346
4	58° F.	.4846
5	59° F.	.4596

Distillation of Condensate From Above and of Plant Product

	Plant Product	Residue Product
I B. P.	75° F.	66° F.
10 percent	102° F.	69° F.
20 percent	124° F.	76° F.
30 percent	146° F.	84° F.
40 percent	166° F.	94° F.
50 percent	188° F.	106° F.
60 percent	212° F.	121° F.
70 percent	240° F.	142° F.
80 percent	280° F.	174° F.
90 percent	.....	.....
E. P.	397° F.	244° F.
Rec.	89.5° F.	88.0° F.
Res.	1.5° F.	1.0° F.
V. P.	14.4° F.	.....
Gr.	78.9° F.	94° F.

TABLE 2

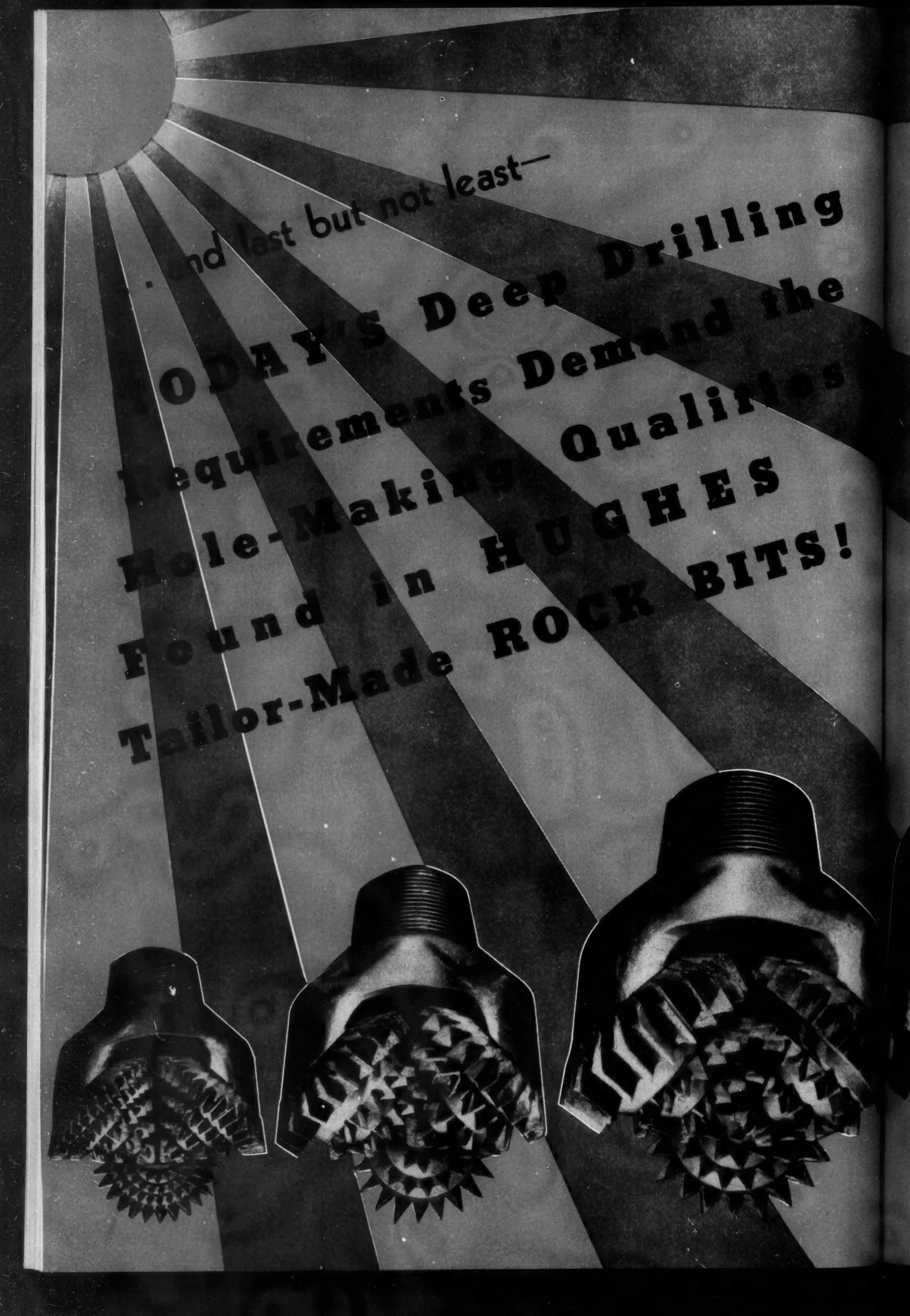
Plant Recovery

Accumulator Temperature	G. P. M. Recovered
78° F.	.46
60° F.	.54
22° F.	.75
0° F.	.92

Commercial Operation

In several plants with which the writer is more or less familiar, the gas comes to the process area at as near well head pressure as is possible, is cooled by water exchange to a temperature above the freezing point of gas-hydrates, the water drawn off, the gas cooled by gas exchange and the gas expanded in the separator accumulator. The final gas temperature is on the order of 65 to 75° F. Where a hygroscopic material is used in one plant, temperatures are brought down to the order of 30-35° F. and by the use of a refrigerating agent the temperatures are brought down to the order of 0° although the operators are experimenting with temperatures down to minus 20° F.

In several plants developed by one group of engineers it is reported that this general design is supplemented by introducing into the gas stream various quantities of cooled condensate. It is averred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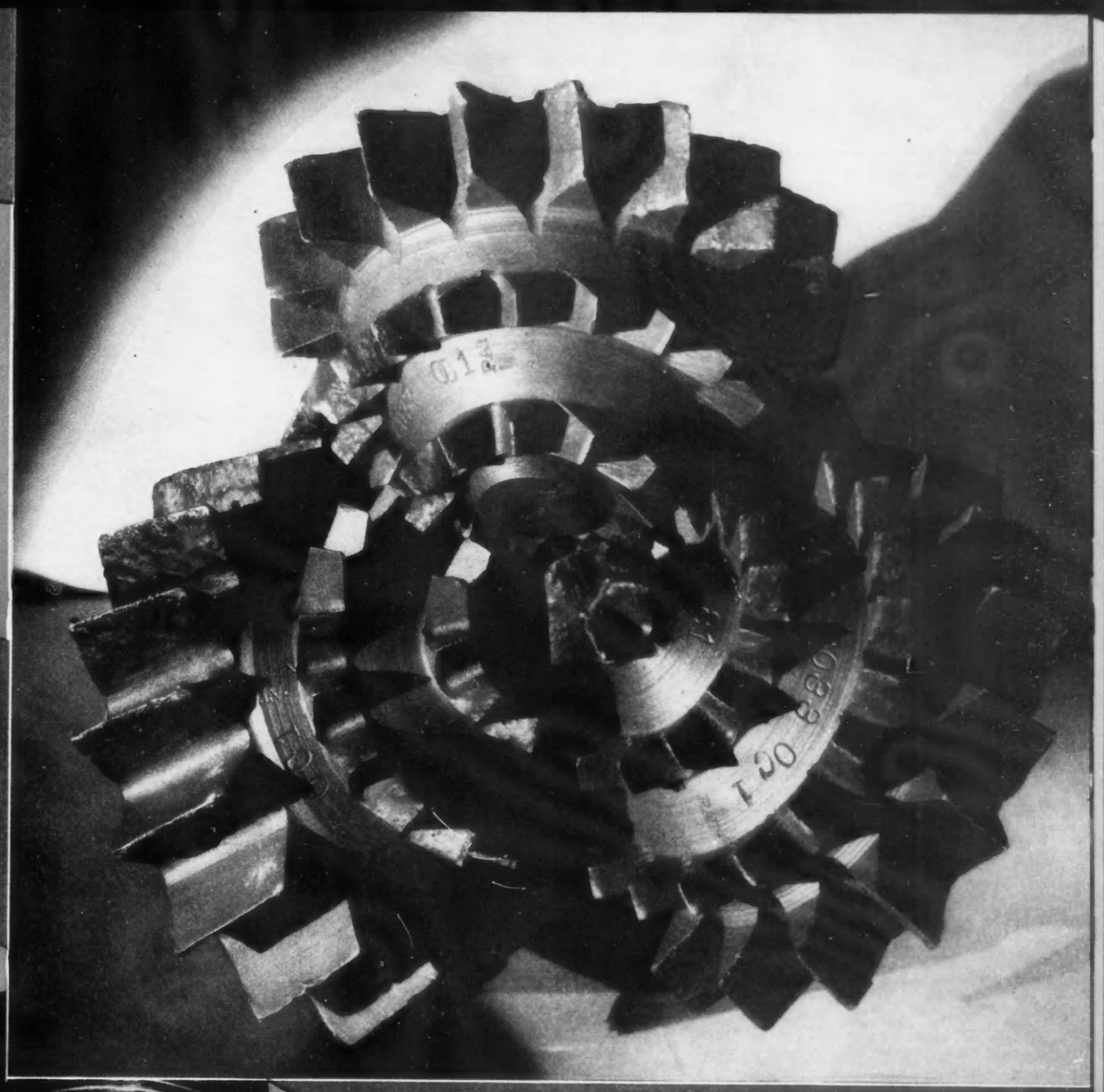

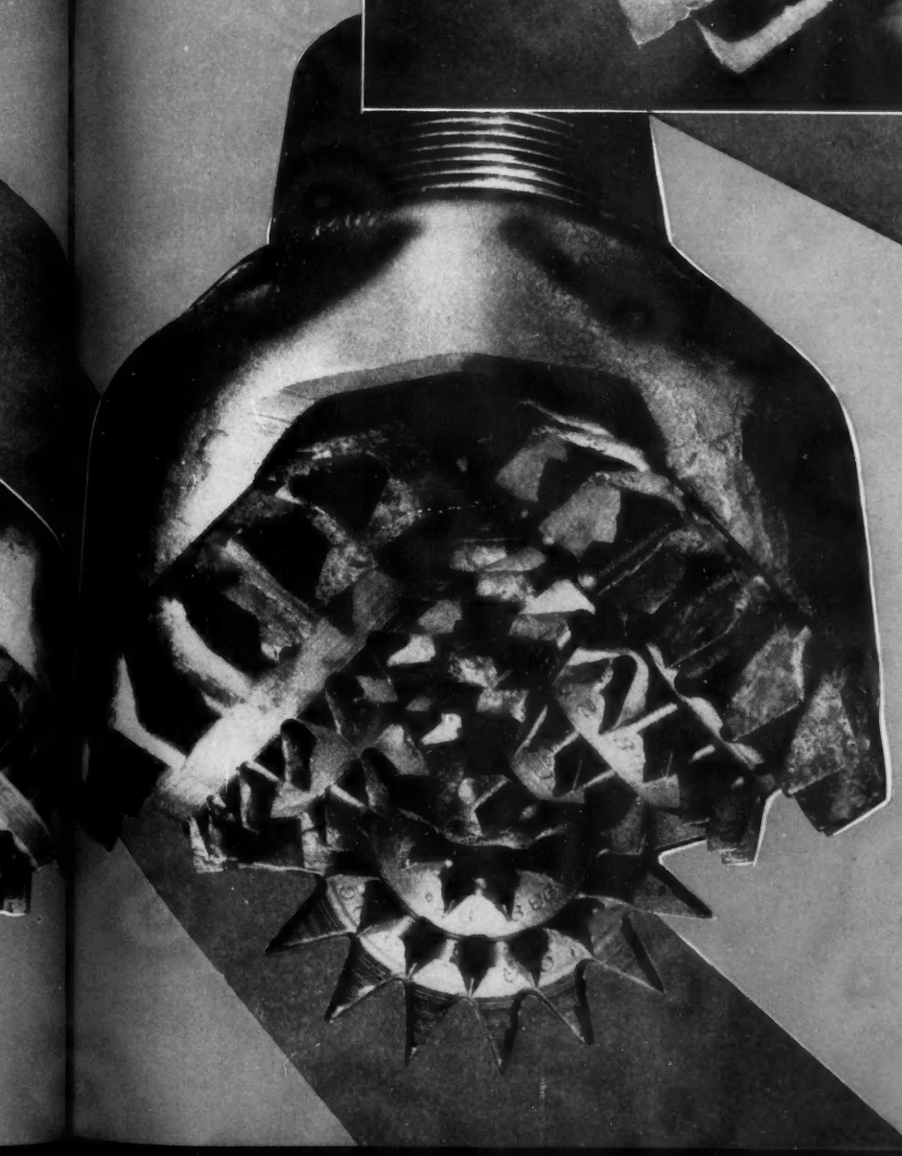

Modern drilling prac[illegible] call for "plenty of weight"—bu[illegible] the bottom of the drill stem (by the use of a tandem string of drill collars); and a Rock Bit with bearings strong enough to "take it."

Hughes Rock Bits will stand the weight, allowing more and straighter hole — and maximum economy in drilling.

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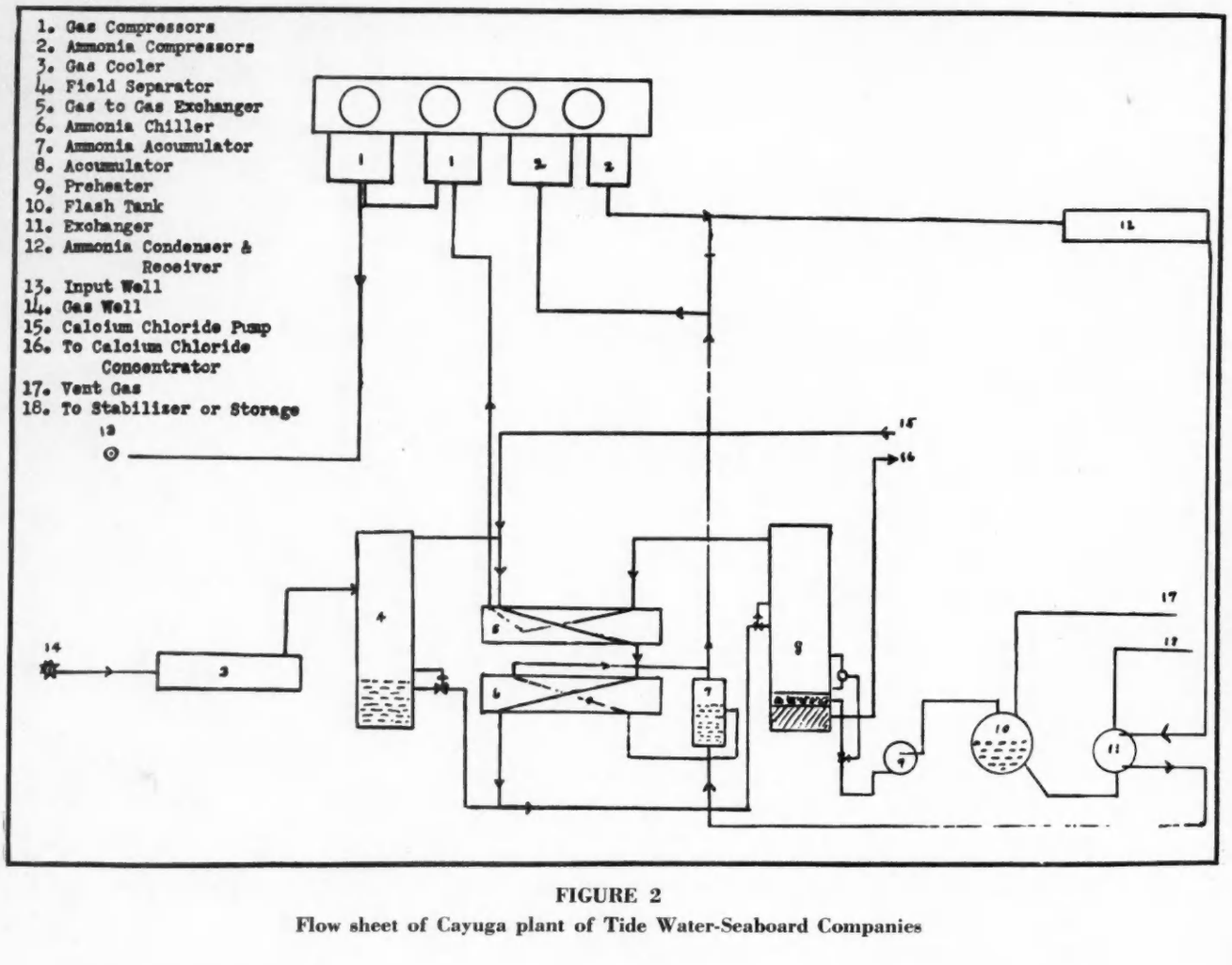

FIGURE 2

Flow sheet of Cayuga plant of Tide Water-Seaboard Companies

that this condensate acts as a densifying and liquefying agent, by increasing the liquid mass. It is claimed for this process that sub-normal temperatures are not required to bring about efficient liquid recovery. Doubtless plant balances will be made available presently to demonstrate the efficacy of the process.

The writer can say even less about the efficacy of the absorption process in the field of pressure used in recycling plants. In the only extant plant the field gas is reduced at the absorbers from approximately 2000 pounds to 1200 pounds, and the absorption operation described earlier in this paper conducted at that pressure. The rich oil travels under its own pressure into a conventional low pressure distillation unit, and the denuded oil is fed to the suction of a high pressure charge pump. Quite apart from the element of cost, the efficiency of the process at the prevailing pressure and its utility at higher pressures remains to be demonstrated. The industry will watch with interest the further development of the absorption process at elevated pressures.

Figure 2 represents a plant described in detail by Vaughan[7], where the wet gas is cooled by water exchange to 72° F.[8], by gas exchange with lean gas to 20° F. and to —4° F. in the ammonia chiller. Water is drawn off in the field separator. The gas is carried at as near well-head pressure (1470 pounds) as possible and is reduced to approximately 1200 pounds in the extraction separator or accumulator where a temperature of —5 to +15 is maintained. Condensate produced in the field separator, if any is carried to the flash tank via the gas stream from the final cooler, or directly. The lean gas at a temperature of —20 to +15, depending upon the operating conditions, is exchanged with the wet gas and passes to the compressor at from 46 to 70° F., and compressed to 1750 pounds[9] to be returned to the formation. The lean gas may go direct to the compressors.

From the accumulator the condensate is preheated and flashed to 250 pounds at 0° F. Vapors from this operation show by charcoal test a content of .025 G.P.M. which is, of course, exceedingly low. The product then goes to stabilizer or to a low pressure separator.

In a plant where the character of the gas did not require temperatures made possible by a refrigerant of the order of ammonia or propane, the flash tank would be operated at a lower pressure and act simply as a surge tank for the stabilizer. Where ammonia is used, the cold condensate is used to cool the liquid ammonia on its way to the stabilizer.

Vaughan reported that in that plant substantially the same horsepower as required to handle a given

[7] A.P.I. Houston, 2-28-39.
[8] A typical day's conditions.
[9] 1650-1750, depending upon the lean gas temperature.

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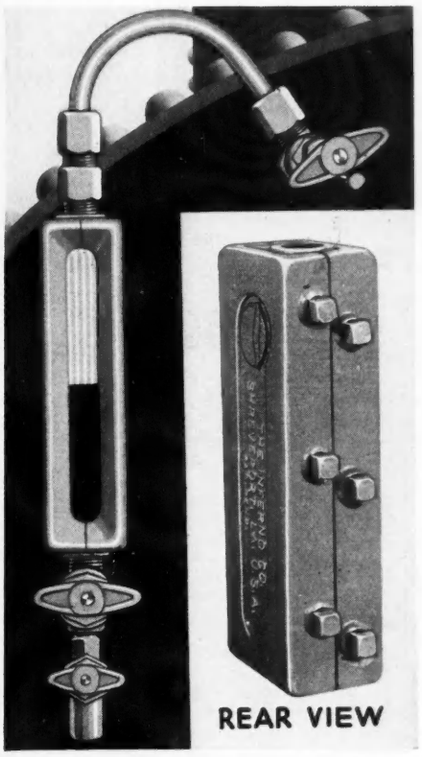

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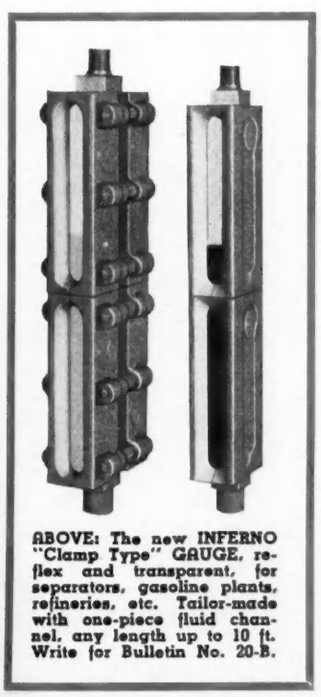

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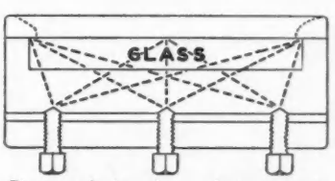

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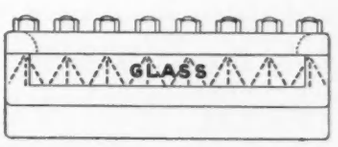

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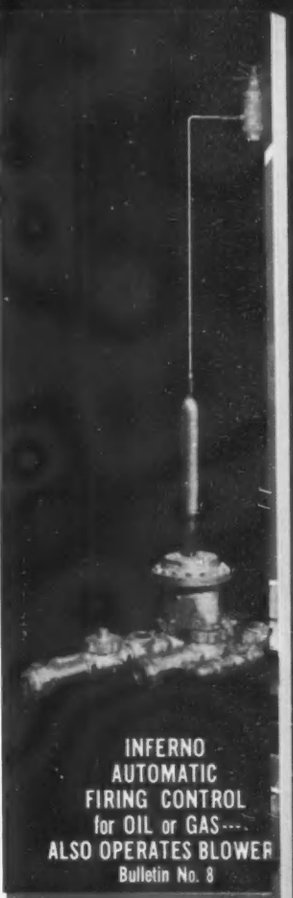

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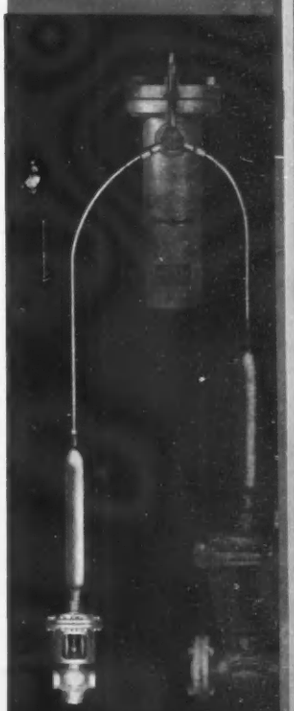

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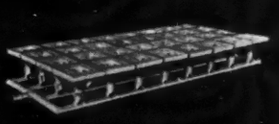

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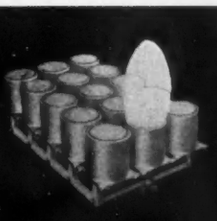

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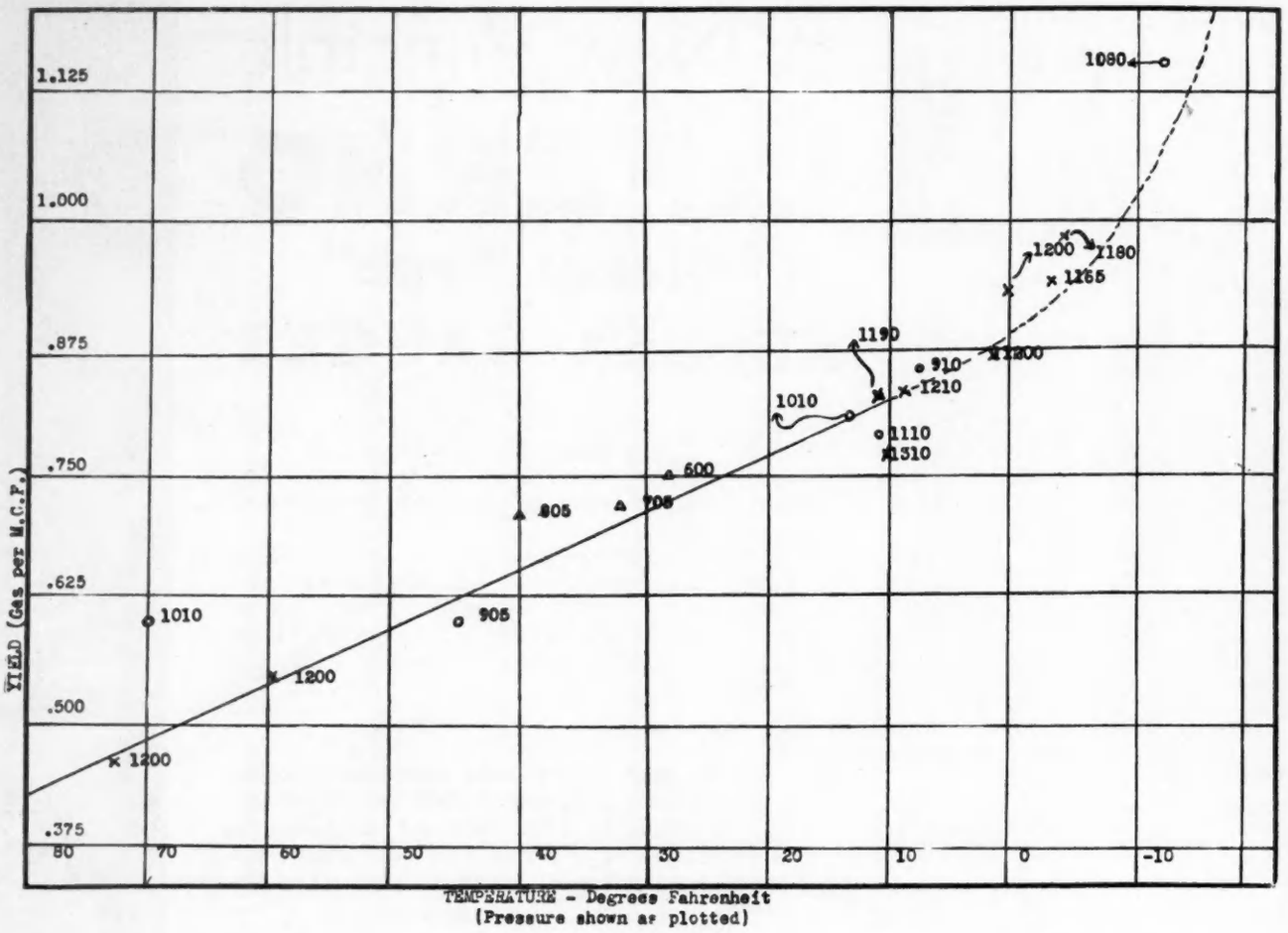

FIGURE 3
Miscellaneous tests—plant scale

volume of gas from 1200 pounds to 1750 pounds at 74° F. as for gas of 8° to 10° F., the horsepower used in refrigeration being compensated for by the cooler gas handled. He represented that the additional cooling was reflected by a 41% increase in yield, the end product being stage weathered to the same gauge pressure. The cost of refrigeration equipment apart from the compressor in this instance would be fully amortized in about six months. Stage weathering being what it is, no accurate information was available to evaluate the finished product in either case in terms of propane or iso-butane. A stabilizer just completed in this plant will permit plant balances to be taken and the results made available.

At the high operating pressures employed in recycling plants more or less dissolved gas is accumulated in the separator. Kimmell and Huntington[10] have shown the results of multi-state separation and more recently Huntington[11] reported the higher ultimate recoveries made possible by stage separation to 0 pounds or to 30 pounds gauge. It is apparent, however, that except in those instances where a very heavy product is recovered, conventional stabilization is required to produce the desired end product and to produce it without waste.

Conclusion

Whatever method is used to extract condensables from gas-distillate wells, certain conclusions may be drawn from an understanding of the principles discussed herein, and elsewhere by others:

(1) The recoverable hydrocarbon content should be sufficiently high. This has been estimated at approximately 18 barrels to the million cu. ft.

(2) Sufficient acreage should be available to justify the investment, which should not be over $20.00 per gallon condensate capacity, including the cost of the wells.

(3) Consideration should be given to the proper drilling and location of output and input wells.

(4) A prospect should be field tested, and in the light of the results, the process designed should economically extract substantially all of the condensables found in the gas which have a commercial value.

(5) The method used should permit of operation at the highest possible pressure in order to keep at a minimum the cost of compression to return the denuded gas to the reservoir.

(6) All the gas should be returned to the formation; where sales are absolutely necessary, they should be held to a minimum. Loss of distillate within the reservoir is the result of the extensiveness of the pressure drop, not of the rate. Every diminution results in the condensation of progressively lighter fractions, and their loss to ultimate production.

[10] *The Oil Weekly*, October 17, 1938.
[11] *The Oil Weekly*, February 13, 1939.

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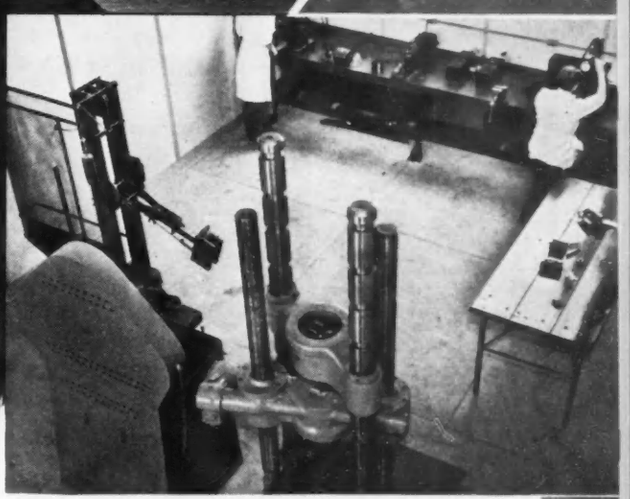

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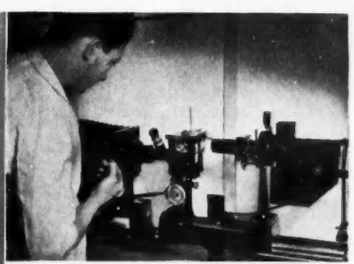

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Appraisal of Oil Properties

By T. A. HALL, Engineer
First National Bank in Dallas

THIS paper is an attempt to enumerate, and discuss the reasons for, the various factors which enter into an appraisal of oil properties. The discussion is confined to properties productive of what is commonly known as crude oil. If the primary production of a property is gas and condensates, it's appraisal is another problem and is a subject for separate discussion.

Basis of an Appraisal

The logical basis on which to appraise a revenue producing asset is an appraisal of its net revenue throughout its economic life, net revenue being defined as the gross revenue less the total cost of producing that revenue. Any acreage which can be considered oil productive can be appraised on this basis.

Fundamental Factors

The fundamental major factors in a complete appraisal on the basis defined, are:

I. Gross revenue or earnings, determined by:
   (a) Recoverable oil, reduced to marketing conditions.
   (b) Unit or market price of oil.

II. Cost of oil produced and marketed, consisting of:
   (a) Investment cost of leaseholds, development and facilities.
   (b) Lifting or direct operating cost.
   (c) Taxes and assessments levied on production, operation and reserves.
   (d) Interest, overhead, general and any other miscellaneous expense in producing the gross revenue.

THIS paper presents an outline of the various factors which should be given all possible consideration in an appraisal of oil properties.

Changed development and production methods and regulatory control of production in the last few years have brought many new factors into appraisal estimates and made necessary the reweighting of the old factors. Of particular importance is the relative weighting of all factors for properties in prorated areas, where past performance may have no direct bearing upon future expectancy.

Special attention is directed to the numerous items which enter into the control of revenue and costs, as the worth of a property logically can be based only upon its net earning power.

Suggested forms are outlined for data compilation to meet the usual purposes of appraisals. These are considered particularly valuable as an aid in fixing property prices and terms because of the present-day relatively low rate of investment return.

Presented at the Southwestern District, A.P.I. Division of Production meeting, San Antonio, Texas, March 16-17, 1939.

III. Net earnings, discounted for deferment. The discounted net earnings total is the present worth of the properties. Some appraisals end with the present worth but a complete appraisal will include a final factor or section, which is

IV. Use made of the present worth.

Following is a discussion of the above factors in the order listed:

(I-a) Recoverable Oil, Reduced to Marketing Conditions

This factor is the most difficult of determination and consequently subject to the greatest error, particularly if the properties under consideration are in a pool which has been under proration.

Appraisals may deal with properties at any stage of development or depletion and various methods for estimating future production are used.

For a fully developed property which has had unrestricted production for several years, a projection of the past production decline curve to the economic production limit is the best method. The major control in this method is the estimate of the combination of market price and expense, to determine the economic production limit. Due consideration must be given the prospects of increasing the economic future recovery by deepening, cleaning out, plugging off water, acidizing, etc., and from secondary recovery methods, such as air or gas injection or water flooding. Reasonably accurate estimates of the effects of various recovery aids generally can be made from the results of the same type of treatment of properties having similar characteristics.

Flush or semi-flush properties present other problems, requiring different solutions. The solutions are particularly difficult if no actual formation data are available or if the properties are in a pool with data on short performance.

It is sometimes necessary to estimate recoveries from the performance of older properties having comparable producing formations, after comparing initial factors, such as potentials and pressures, and also future influencing factors which will be discussed later.

In some pools, even though prorated from the beginning of production, it is occasionally possible

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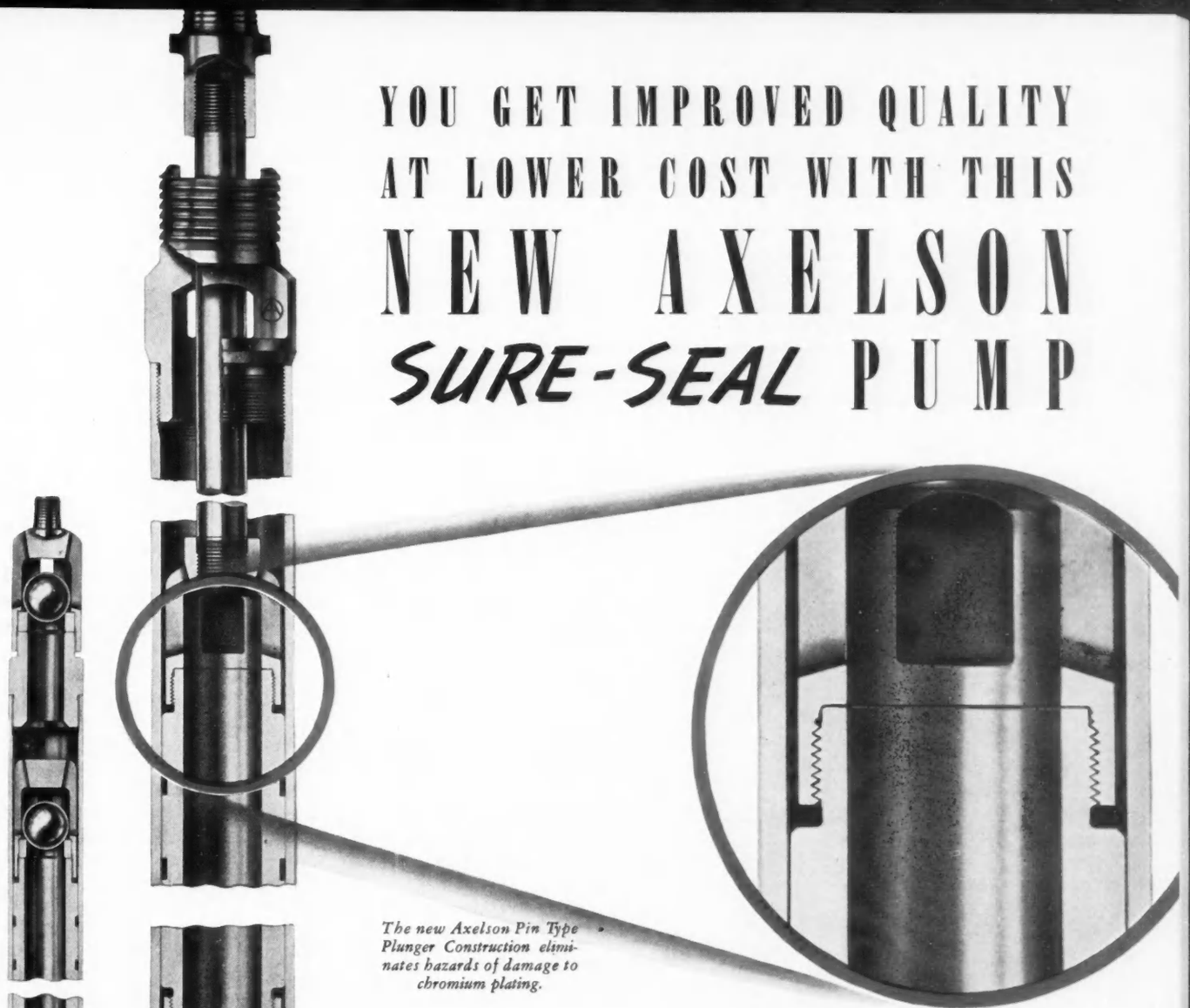

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to establish pool-wide apparent relationship between recovery and potential, bottom hole pressure or other factors. This relationship, however, may have no value for individual properties within the pool because they may not have average pool-wide conditions or they may be subect to change in conditions.

The changes in the development, completion and producing methods in the last eight years have brought many new factors into production and value estimates.

In estimating future production the following factors should be given all possible consideration:

A.—Oil productive acreage.

B.—Weighted average thickness of oil saturated formation.

C.—Weighted average porosity in the oil saturated zone.

D.—Weighted average percentage of oil saturation.

The above four factors determine the total quantity of oil in place, under formation conditions, and to this must be applied the fifth, or,

E.—Recovery factor.

Discussion

A.—The oil productive acreage must be estimated from studies of the available geological and geophysical information, particularly the records of wells drilled in the area. Especially necessary is the placing of the gas-oil contact and the water table, if either exists, which determine the extent of the oil saturated zone in the horizon or horizons underlying the acreage in question.

Proper allowance should be made for faulting or other geological features known to exist or are known to be common to the area.

If all the acreage under consideration is not subject to definite determination of productivity it is advisable to appraise in two or more classes, such as proven, semi-proven and prospective. Some of the acreage may be so prospective as to rate only a speculative value.

B.—The weighted average thickness of oil saturated formation within the oil productive zone can be estimated only from actual porosity determinations and from what is known of the general continuity of the horizon in the area. Proper deductions should be made for impervious sections.

As with the productive acreage, the saturated formation thickness may be so variable that it is advisable to treat the total acreage in parts.

C.—The weighted average porosity is estimated from either or both the porosity value determinations of samples from wells in the pool and the average of that found in the same horizon in other areas.

D.—The weighted average percentage of original oil saturation of the pore volume within the oil productive zone is controlled primarily by the connate water content and by free gas which may be trapped. At a later time, the oil saturation may be reduced by the intrusion of water at levels above the water table and by the creation of free gas by gas in solution being liberated, upon the reduction of formation pressure. The pore volume occupied by other than oil, at any time, may vary from a small percentage to more than fifty percent.

E.—The next problem is to apply an estimated recovery factor to the estimated oil in place. This factor may vary from a small proportion to several times the total.

Many factors enter into the determination. No attempt will be made to give them relative weights. The complete discussion of any of them would constitute a full length paper. They are entirely inter-related and the final average weighting will meet but one set of conditions. Under certain conditions one factor may entirely void another or it may outweigh the majority of all other factors.

These factors are:

1. Value and continuity of horizontal and vertical permeability. These data, in combination with the viscosities of the reservoir fluids, determine the energy required for the movement of the fluids through the reservoir. Actual permeabilities are determined by laboratory analyses of cores, and relative values may be determined by production tests consisting of establishing the relationship between production rates and their corresponding formation differential pressures.

Permeability seldom is uniform throughout the thickness of the oil saturated zone in any well and it may be so variable as to cause a small percentage of recovery in the less permeable parts if the entire section is open to production. The well's production may be obtained from the more permeable parts with a differential pressure in the formation too low to move much oil through the less permeable parts. Experience in gas injection and water flooding indicate that the slower the rate of movement the more complete will be the recovery from the entire section.

Production or movement rate will have a bearing upon the efficiency of recovery even in a section having uniform permeability. The higher the production rate for any permeability the greater is the differential pressure created in the formation, and particularly with relatively low permeability this is conducive to the creation of free gas, irregular water encroachment and other conditions operating to reduce the ultimate recovery.

2. Shrinkage. This is the proportionate part of a unit volume of oil in place when measured in the stock tanks on the surface of the lease. Shrinkage or reduction in volume is due to the escape of liquefied vapors or vapors in solution upon the reduction of pressure, to the effect of temperature change from reservoir to pipe line values, to pipe line deductions and to un-reclaimed tank bottoms. The shrinkage may be as high as forty percent.

Attention is directed to the possible effect of the combination of the saturation and shrinkage factors. For example, if the saturation is sixty percent and the shrinkage forty percent, the oil marketed would equal only thirty-six percent of the total calculated pore volume if complete or one hundred percent recovery of oil in place were assumed.

3. Source, amount and efficiency of the natural energy for moving the oil to the well bores. This energy is available from gas in a free gas cap, from gas in solution in the oil and from formation water in contact with the oil reservoir, and the energy is supplied by the expansion or movement of the formation or reservoir contents with the reduction of oil reservoir pressure co-incident with production withdrawal.

An oil reservoir may have from one to all of the above sources of energy which can be expected to be available for the production of oil.

4. Conservation of natural energy. Ample and effective natural energy may be initially available for producing much of the oil from

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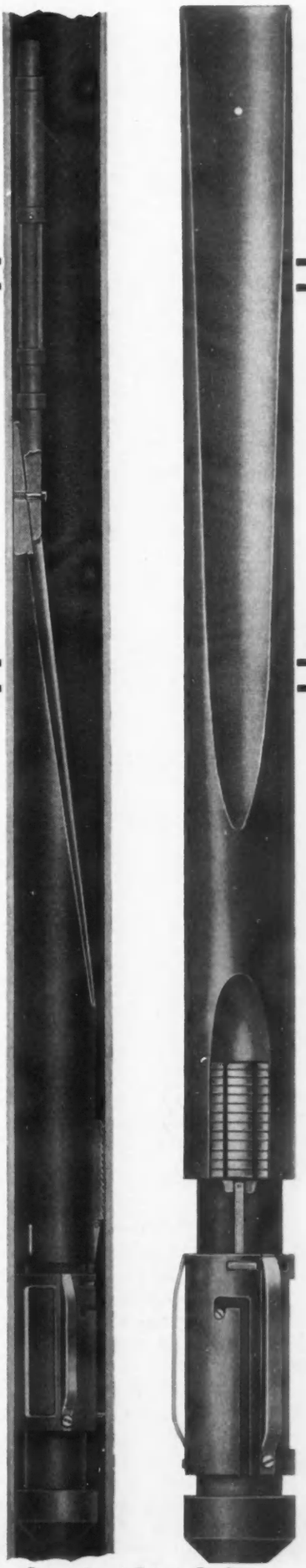

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a reservoir but if this energy is inefficiently utilized, the result may be oil, otherwise recoverable, left in the reservoir upon abandonment, even though secondary recovery methods may be used.

It is now a generally accepted fact that the nearer the reservoir contents are maintained to their original state until they reach the well bore, the more efficient will be the recovery, and this can be realized only through the efficient utilization of the natural energy or through its replacement. The degree of approach to the ideal depends upon the manner of well completions and upon the rate and distribution of withdrawal of the reservoir contents.

Consider the probability of encroaching water being produced, plugged off or returned to the horizon and also the probability of a free gas cap expanding down-structure, or receding up-structure, and allowing oil to move into dry formation.

5. The operators. The majority of the operators may or may not be in sympathy with an orderly and efficient program of development and operation. More efficient results naturally can be expected if all the operators practice the most efficient methods established for a pool.

6. Well spacing. This factor is given weight after due consideration is given to permeability, gas-oil ratios, available energy, production rate and the basis of the allocation of the prorated production. Much speculation is of course necessary for an undeveloped property or a property in a new pool.

To make the broad assumption that a property value, by reason of oil recovery, will be in direct proportion to the number of wells drilled, is fallacy. The method of allocating the prorated pool is too often the basis of weighting the spacing factor, however in some instances it seems to control.

Based upon reservoir conditions there must be a well saturation point for any property, beyond which the value of the additional oil produced will not return the cost of drilling and operating additional wells.

Properties having relatively high gas-oil ratios may waste energy in producing a given amount of oil from too many wells. This is possible when a top allowable is placed on a sufficiently developed pool and drilling continues.

Any property at some time may have no production restriction and a small drainage area caused by dense drilling will hasten the economic limit of well operation, which can be overcome if it is possible to abandon some of the wells.

Since the appraiser is determining the value of a property, well spacing should be considered quite important.

7. Type and size of reservoir and position of properties on structure.

Consider the proximity of the properties to encroaching water or the gas cap for the prospects of their receiving their fair share of the benefits of the common pool energy. For example, a property toward the up-structure edge of a wide up-dip type of reservoir with no gas cap may receive very little pool energy because of the down-structure production rate.

Consider structural position also from length of economic life. For example, in the type of pool just mentioned, two properties having identical factors of acreage, sand thickness, porosity, permeability, drilling density, etc., but one located toward the water edge of the field and the other toward the up-structure edge, cannot, under usual proration regulations, be expected to recover the same amount of oil. The up-structure property may have a producing life of many years after the other property is abandoned. On the other hand, in a pool of anticlinal or domal type of structure having porosity to a uniform water table, the economic life of properties by reason of their relative structural position may be more nearly in proportion to oil in place, particularly if there is uniform well spacing.

The type of reservoir and thickness of saturated formation over its area, the well spacing and the basis of production allocation are the major factors controlling the relative economic life of properties.

8. Aids to natural recovery and secondary recovery methods.

Even in prorated pools, shooting or acidizing may increase the efficient utilization of the natural energy and increase future recovery and also secondary recovery methods may be feasible as a last stage.

9. Basis for allocation of prorated or restricted production.

The pool production rate and distribution of that rate has a pool-wide effect and also a localized effect upon recovery.

In the discussion of the conservation of natural energy it was stated that the approach to maintenance of the original state of the reservoir contents was conducive to more efficient recovery. Proration, and particularly its conservation regulations, create this condition to some degree and doubtless results in greater ultimate pool recovery.

Allocation of the prorated production may have an entirely different effect upon any particular property than that of the pool average, even though the property may have pool-average formation factors. As one example, the factors used in allocation may result in well spacing becoming the major factor in current production rate, which rate may be a small fraction or may be several times that which would be considered as the relative rate for the property in question. An appraiser must consider the allocation factor not only at the time of the appraisal but over the future of the property. Additional wells may seem justified, or required even though thought not justified.

Localized excessive production rates may result in excessive future recoveries, or they may result in the formation of free gas, in water intrusion or other conditions which will reduce the recovery advantage by shortening the economic life of the area involved.

If one property realizes an ultimate recovery in excess of that which reasonable factors would give it, it must be at the expense of some other property, and an appraisal may be dealing with both properties at the same time.

10. Rate of development.

The rate at which a non-producing or partially developed property is developed has a bearing upon ultimate recovery if the property can be considered to be subject to general pool drainage.

11. Past production.

If the basic production estimate is from the beginning of production, the production prior to the appraisal of course must be deducted from the total.

(I-b) Market Price

Having estimated the future oil production, the only other factor needed to determine the gross income is the market price.

Unless very good evidence exists to do otherwise, market price in effect at the time of appraisal should be used, and provision for

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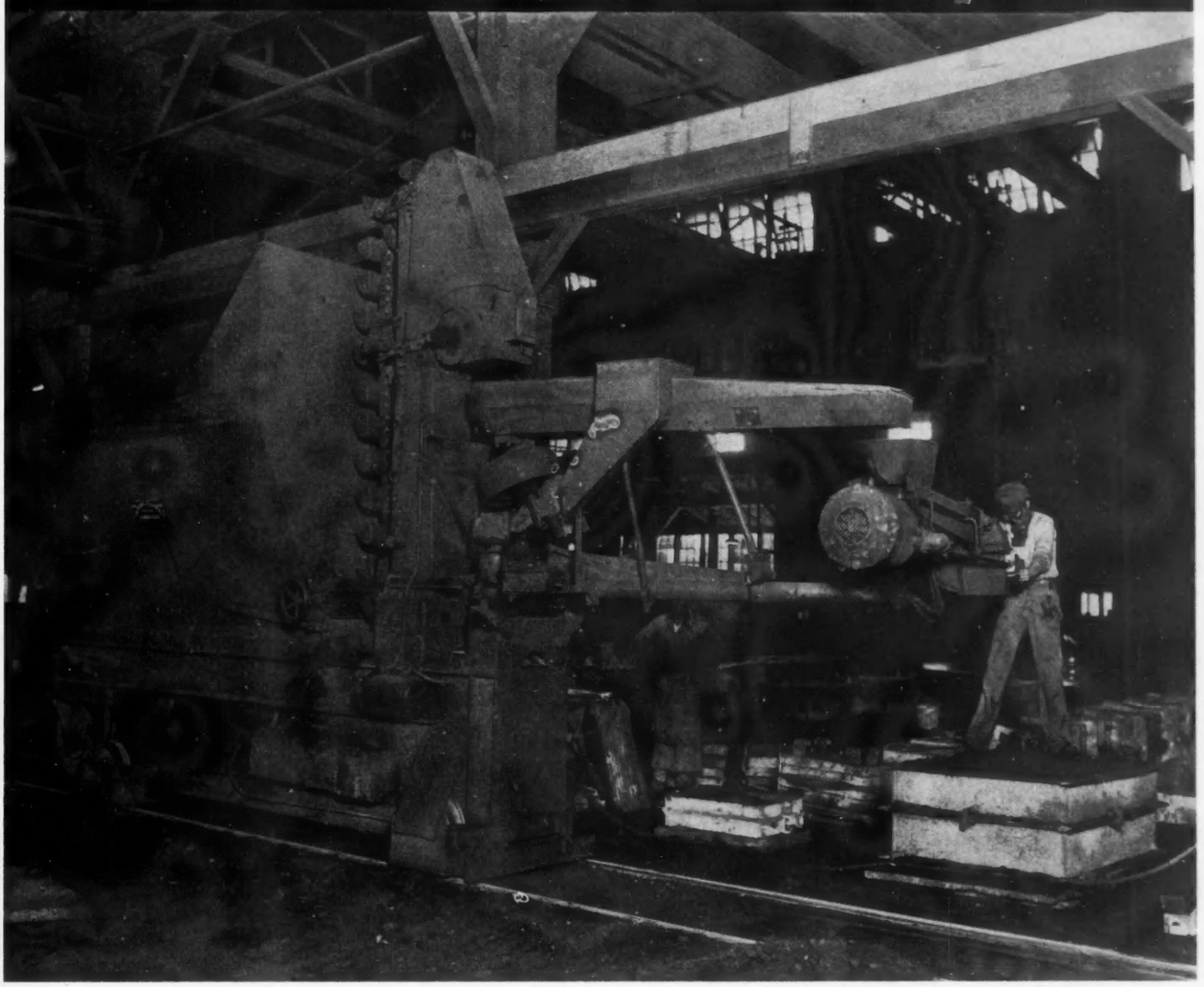

This Sandslinger, a recent addition to our foundry, handles 7½ cubic feet of sand per minute. It gives a uniform ramming of the moulds. It provides a smooth, even distribution of sand. It protects your patterns. It is the latest thing in the scientific manufacture of steel castings. It is the only one in the South. It represents a $25,000 investment . . . just another step in our march of progress to give you the finest steel castings available.

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this contingency made elsewhere in the appraisal.

Some factors to consider in concluding if the current market price is reasonable to use for future production, are:

A.—Past average market price of crude of like kind.

B.—Geographical location of properties, or accessibility for refining markets.

C.—Desirability of crude for all refining purposes, affecting its probable future demand.

D.—Majority ownership of pool.

E.—Ratio of present supply, production and demand and the estimated future ratio of those factors, considering also the control of the ratio by regulatory bodies.

F.—Average total cost of production in the local area and also in the general area, as the mid-continent as a whole.

G.—Estimated economic life of the properties, for effect upon future earnings should the price be off for a time.

H.—Inflation or deflation of the value of the monetary unit.

To the oil revenue may be added the accompanying gas revenue. Generally this is from casing-head gas and in many cases is so small that it may be neglected.

Many pools will have a gas cap revenue after oil operations have ceased but the discount for deferment of this revenue will give it small present worth.

(II-a) Investment Costs

A major investment item is for development, which includes the drilling of wells, the installation of producing equipment and the lease facilities, such as tank batteries, water wells, lines, roads, camps, etc. The cost of individual items can be estimated closely but the eventual number of some items is subject to error, particularly the number of wells required. In this connection the possible number and the cost of dry holes must be estimated; however, this item generally is charged to expense rather than investment.

Development investment items are the basis for depreciation charges against earnings.

Another major investment item may be the leasehold cost, particularly if the property is proven when acquired. The leasehold investment is the basis for depletion charges against earnings.

(II-b) Lifting Cost

The lifting cost is the direct expense on the property for producing and preparing the oil for sale. This consists principally of labor, operating supplies and material and repairs and replacements.

The cost must be estimated from past experience in costs for similar depths, types of crude and formations and from the expected future effect of anticipated production methods.

Lifting cost, being one of the factors determining the economic limit of production, should be given careful consideration. Depths, crooked holes, water-oil ratio and type of artificial lift employed will be large factors in time of abandonment of wells, most of which will be capable of producing oil when abandoned.

Attention should be given the consideration of all material and equipment on the property, to determine if it will last the life of the production or will require excessive repairs and replacements. This applies especially to the production string of casing.

(II-c) Taxes and Assessments

The taxes and assessments are known if the properties have produced for some time and initial values can be estimated closely if the properties are in a new field. Over the future they must be decreased or increased according to the expectation of the appraiser.

Ad valorem tax on equipment and oil reserves, where levied, must not be neglected, for in many cases it exceeds the gross production or severance tax and in some cases exceeds the lifting cost.

(II-d) Other Charges

Whether or not interest, overhead, general and other charges become a part of the body of the appraisal depends upon the accounting procedure of those for whom the appraisal is being made.

(III) Discounted Net Earnings or Present Worth

Since the revenue and expenditures are over the period of the economic life of the properties the net earnings must be discounted for the time element. The discounted net earnings constitute the appraised value or present worth of the properties.

Discounting is, in effect, charging interest against earnings from the present time until it is anticipated they will be received. The annual interest or discount rate used is the assumed interest value of money over the life of the earnings.

The usual procedure is to determine the present worth of a property in one set of calculations by using totals and weighted averages. If a weighted average discount based upon time and production rate is used it places the appraisal on the basis that all expenditures are made in direct proportion to revenue throughout the life of the property. Cash bonus, oil payments, well costs, pumping equipment costs and lifting costs may have no sort of relation to revenue. The usual way to compensate for this variation is by an arbitrary change in the weighted average discount factor, which is difficult to determine and may lead to serious error. No two properties of a group may have the same ratio.

Substantial error may be avoided by working the appraisal annually through the estimated period of major expenditures and major changes in revenue and then estimating the remainder in totals and weighted averages.

(IV) Use Made of Present Worth

The assumption is made that up to this point in the appraisal, the purpose of the appraisal has not been a factor in any of the estimates made.

Appraisals are usually made for the following:

1. The owner, to determine the value of his equity for use in statements or to fix a sale price and terms.
2. A prospective purchaser, to fix a purchase price and terms.
3. Loan collateral.

The present worth may be appreciated or depreciated by any amount for the following reasons:

1. Reasonableness of weight given all factors.
2. Diversification of properties with respect to the number of fields included and the distribution of properties in any one field. The greater the

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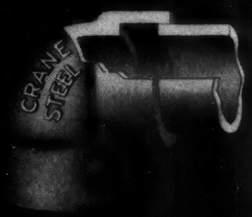

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number of properties and fields involved the more probable is the compensation of errors in estimating.

3. Speculative value, often for shallower or deeper horizons.
4. Production and drilling hazards, such as blow-outs.
5. Salvage value of material and equipment. Usually this will be a minor item in a long life property because corrosion, wear and obsolescence will have reduced it to small use or sale value. In the case of a short life property, however, salvage may be a substantial item.
6. Profit wanted by a seller.
7. Hazard and profit margins wanted by a purchaser.
8. Reasonable safety for a loan.

Form of Appraisal

The form of appraisal will vary with the nature of the interest appraised. Not all the items covered herein appear in all appraisals but universal forms will be shown.

To determine the present worth of the interest or interests involved, a form should be set up by leases or groups of leases having combinable factors. This is filled in from the various work sheets compiled in the determination of the items, which sheets may or may not constitute a part of the submitted appraisal.

The following present worth form is a suggestion:

1	2	3	4	5	6
Year	Production	Market Price	Gross Income	Future Investment Leaseholds	Development
7	**8**	**9**	**10**	**11**	**12**
Lifting Cost and Taxes	Other Charges	Total Expenditures	Net Cash	Discount Factor	Present Worth

In this tabulation column 5 includes all outstanding lease bonus obligations, either cash or oil payments.

Column 6 includes all development costs, including outstanding obligations for past development, either cash or oil payments.

In some instances, when an appraisal is being made for a prospective purchaser, all outstanding obligations are not included for the reason that the seller agrees to assume them.

Column 8 is the sum of columns 3 to 7, inclusive.

Column 9 is column 2 minus column 8, and shows the net cash requirements by periods.

Column 10 is a cumulation of column 9 and shows the amount and time of the maximum net cash invested and also the time that all cash expenditures will be returned.

Column 11 is column 2 minus column 6 and parts of column 7, and shows the net operating earnings for the period indicated.

Column 8 includes interest, overhead, etc.

The intended use of the present worth is next made and for most uses an additional form is needed to complete the picture.

Values in all present worth forms are combined and completed in the following suggested form:

1	2	3	4	5	6
Year	Gross Income	Investment Costs Leaseholds Cash	Oil	Development and Facilities	Lifting Cost and Taxes
7	**8**	**9**	**10**		**11**
Other Charges	Total Expenditures	Status of Cash Period	Cumulative		Net Operating Earnings
12	**13**		**14**		**15**
Depreciation and Depletion	Net Income		Average Book Value		Rate of Return

In this tabulation:

Columns 3, 4 and 5 represent the owner's future investments only, or the prospective purchaser's division of the initial purchase consideration plus his future investment, all in the manner shown.

Column 7 represents interest charges, general expense, overhead, etc.

Column 12 is the depreciation and depletion charges. These will depend upon accounting procedure to the extent of which expenditures are capitalized and upon what basis the capitalized portion is retired through these items. These charges are reserves from earnings and are available for reinvestment to replace the produced reserves.

Column 13 is column 11 minus column 12 and is the portion of the earnings available for dividends or other purposes and is the income subject to income tax. The total of this column, which is the same for column 9, represents the net profit from the properties.

Column 14 is the sum of any part of columns 3, 4, 5 and 7 which are capitalized, minus column 12, and represents the net capitalized investment carried on the books. This should be averaged for the period indicated. The net book value shown in this manner is based upon the actual investment and not upon an appreciated value above cost.

Column 15 is column 13 divided by column 14 and represents the percentage return through earnings from operation, of the net book investment.

Conclusion

Appraisal of oil properties is not an exact science. Relative weights given factors rest largely with the individual opinion of the appraiser. Of importance is to give all factors careful consideration to avoid overlooking one which is of value. A factor having very small weight in an appraisal of one property may be the controlling factor in another.

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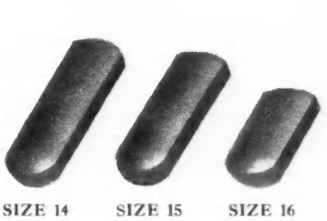

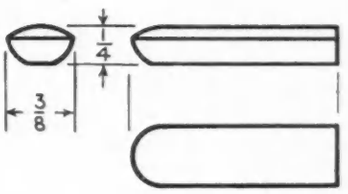

Size 14: 1¼ to 1½ in. long
Size 15: ¾ to 1⅛ in. long
Size 16: ⅜ to ¾ in. long

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Rotary oil well drilling tools hard-faced with Haystellite inserts and tube rod, and many other moneysaving applications of Haynes Stellite products, will be shown at the Oil-World Exposition in Houston, Texas, April 24-29.

Wildcat Drilling Gain Brings Increased Kansas Discoveries

By GRADY TRIPLETT, Staff Writer

DESPITE a lower total of wells started in the first two months of 1939 in comparison with the corresponding period of 1938, wildcat drilling in Kansas, both in wells started and discoveries made, is ahead of the 1938 period. The 1939 record for January and February was 27 wildcat locations staked, most of them in Western Kansas while only 22 such locations were made in the first two months of 1938. For these months of 1939, 9 new fields have been discovered and a new producing formation has been added in one instance. These months of 1938 were responsible for but 6 new fields and a single new producing formation for an old field.

The record for the total of field operations, however, shows that there were 313 locations made in January and February, 1938 in Kansas, while in the first two months of 1939 the total has been but 212.

Outstanding among the 1939 discoveries is the Ellis County Peavey pool, found by Peavey 1-A, SEC SW 13-11-18w, completed by Darby Petroleum Corporation February 14 for pumping potential of 2274 barrels, total depth 3411 feet in Arbuckle lime.

The area has been given a field name by the Kansas Corporation Commission but indications are that further development will link it into the Burnett South pool, whose southwest boundary is 2½ miles northeast of the two Peavey wells. Production in the Burnett South pool, also from Arbuckle lime, has two clusters of 4 wells each and covers a mile, the area looms as one to compare in area with the Bemis pool, four miles east. The Burnett South pool was discovered in May, 1938 by Central Petroleum Company and associates, whose Hadley 1-SE NE SE 12-11-18w, made potential of 1266 barrels from Arbuckle lime between 3329 and 3333 feet. Darby Petroleum Corporation has three producing offsets around the discovery. A mile northeast Darby Petroleum Corporation has two producers and George P. Dickey has two wells. Three wells are drilling northeast of the discovery.

In January, Ellis County had its first 1939 discovery by completion of Hall D-1, C NW 2-12-17w, by Cities Service Oil Company, the Bemis South pool, which now has its second well.

Barton County has had three of the 1939 discoveries. One of these, the Clawson pool, has two producers. The discovery well, completed by Virginia Drilling Company in January, made a potential of 679 barrels from Arbuckle lime. The Hagen pool was opened by Newton, Pulse and associates, Hagen 1, SWc 20-20-11w, a mile south of the Ellinwood pool.

The foremost development for Barton County, however, has been the extensions for the Prusa pool, a discovery of December, 1938. The discovery well was completed by Sinclair Prairie Oil Company, Mary Prusa 1, NWc SE 20-16-11w, for pumping potential of 1313 barrels from Arbuckle lime between 3335 and 3352 feet. It is 3 miles south of the Davidson pool.

The new producing horizon for the Ainsworth pool, Barton County, came with completion in the Topeka lime by Skelly Oil Company in Gage 1, SEc SW 35-16-13w. This well missed the Arbuckle lime and plugged back. The field has 51 producers in the Arbuckle lime.

Extension of the Campbell pool and discovery of the Proffitt pool were contributions to Rice County development in the first two months of the year. Russell County had two new pools and three extensions in this period. Graham County drew a half mile extension for the Morel pool. Kingman County had a pool discovery but the potential of only 50 barrels.

New Discoveries in Kansas in 1939

County	Operator and Well	Location	Formation	Type Discovery	Potential (Barrels)
Barton	Sinclair Priarie Oil Co.'s, Prusa 1	C SL NE 20-16-11w	Arbuckle	Extension (Prusa Pool)	1,252
	Skelly Oil Co.'s, Gage 1	SEc SW 35-16-13w	Topeka	New horizon in Ainsworth pool	451
	Amerada Petroleum Corp.'s, Kruckenberg 1	C NE NE 14-19-15w	Arbuckle	New Pool (Not named)	132
	Virginia Drilling Co.'s, Clawson 1	SWc NW 17-20s-11w	Arbuckle	New Pool (Not named)	679
	New, Pulse et al's Hagen 1	SWc 20-20-11w	Arbuckle	New pool (Hagen)	669
Ellis	Cities Service Oil Co.'s, Hall "D" 1	C NW 2-12-17w	Arbuckle	New pool (South Bemis)	765
	Darby Petroleum Corp.'s, Peavey "A" 1	SEc SW 13-11-18w	Arbuckle	New pool (Peavey)	2,275
Graham	Continental Oil Co.'s, Drumm 1	SEc NE 16-9-21w	Arbuckle	Extension (Morel pool)	1,043
Kingman	Bunte Brothers, Inc., Shephard 1	SEc 10-27-10w	Lansing-Kansas City	New pool (Not named)	50
Rice	Cities Service Oil Co.'s, DeWitt 1	C SL NE 33-19-9w	Arbuckle	Extension (Campbell pool)	1,544
	Tatlock's Proffitt 1	SW SE SW 12-20-10w	Arbuckle	New pool (Proffitt pool)	298
Russell	Stanolind Oil & Gas Co.'s, Boxberger 1	SWc SE SW 14-14s-14w	Lansing-Kansas City	Extension (Gurney pool)	679
	Yankey & Stearns', Krug 1	NW SE NW 7-15-13w	Lansing-Kansas City	Extension (Coralena pool)	795
	Shields', Gross 1-A	C SL SW SE 5-15-13w	Dodge City	New pool (Not named)	603
	Wakefield's, Meharg 1	SEc 16-15-13w	Lansing-Kansas City	New pool (Fairfield North)	837
	Southern, Inc.'s, Sellens 1	SWc 22-15-13w	Arbuckle	Extension (Sellens pool)	153

WORLD DEVELOPMENT and TECHNOLOGY

Edited by
WM. V. GROSS, Associate Editor

Hope for Mexican pact revives as Richberg, Cardenas, meet

National celebration was planned in Mexico for March 19 to commemorate the first anniversary of the confiscation of American and British oil interests. Plans for the festival, at which President Lazaro Cardenas will be the central figure, mirrored the obstacles faced by Donald Richberg, special emmissary for the dispossessed companies, as he attempted to arrange friendly settlement of the dispute and obtain remuneration for his clients.

Hope for such a settlement, at low ebb on March 14 when Richberg announced plans to return to Washington, quickened later in the week as further conferences between Cardenas, other officials, and Richberg prompted the attorney to report "considerable progress." President Cardenas is said to have advanced a plan of his own during a two-hour session on March 16. Details of the proposition were not made public but the Mexican press carried plans for another conference March 18.

Superior geologists leave for work in New Zealand

Jack Knight and Kenneth Kraemus, geologists for Superior Oil Company of California, sailed recently on the steamship Mariposa for New Zealand, where they expect to spend about three years in exploratory work for the company on several hundred square miles of government permits. Knight and Kraemus will operate out of Palmerston, it is said.

An article summarizing exploratory development in New Zealand to date and telling of wildcatting plans for 1939 appeared in the February 27 issue of THE OIL WEEKLY.

Poor roads handicapping Afghanistan and Iran

Commenting on Dr. Frederick G. Clapp's article on Afghanistan and Iran, published in the February 27 issue of THE OIL WEEKLY, a reader who has spent some time in both countries has added to Dr. Clapp's observations the following explanation for lack of development of potential reserves in that part of the world:

"Until recently Iran and Afghanistan have not seen any extensive development. This lack of development has been due to the lack of transportation facilities, and the character of the country and its people. Transportation is generally poor, because of the great difference in elevation between the high mountains and the lowlands, the poor roads which connect the different districts and towns, and the scarcity of food and water in many of the desert regions. The people are generally of the wandering nomadic type who obtain their living from the soil and different flocks.

"The mountains and deserts have been beneficial in the past by delaying and resisting the conquering hordes of invaders, but they have also been detrimental in delaying the development of the country. Gold, silver, lead, copper, sulphur, and different precious stones, together with outcrops of coal, seeps of oil, gas and pitch are known to exist in various parts of these countries. Under Reza Shah Pahlevi, Iran has become a progressive nation and many of these resources are being developed, but Afghanistan, because it is not so progressive, will perhaps see its big development sometime in the future."

To build Saskatchewan tar sand plant at Regina

Scientific Equipment Laboratories will construct a plant at Regina, Saskatchewan, Canada, to process 25 tons of Alberta tar sands daily for oil and other products, R. W. Ross, president, announced last week. The unit will be used as a "pilot plant" from which plans will be made for a larger plant to be constructed at Waterways, Alberta, Ross said.

Geologists start work on large Punjab concession

Geologists and geophysicists have arrived in the State of Bahawalpur, in the Punjab of India, for preliminary work on a 16,000 square mile concession held by Indian Oil Concessions, Ltd., a Calcutta corporation representing Anglo-Indian and American interests.

While the relatively new company is understood to have been organized by Andrew Yule and Company, general merchants of India, it has been stated that the Standard Oil Company of California and The Texas Corporation are financially interested in it and that these two American corporations are supplying the necessary technical staff and equipment for the preliminary exploratory work.

The large holding of Indian Oil Concessions, Ltd., is south and west of Sind and the Punjab, and north of the Rajputana Desert.

Wildcat in Peru gets flow of high-gravity oil

Blue Goose Oil Company (Compania de Petrolia Ganso Azul Ltd.) has completed its Agua Caliente 2 wildcat in Peru, for an initial yield of 200 barrels of 60-gravity oil per day from 1174 feet. This South American well is situated on a block of 90,000 acres at the headwaters of the Amazon River, on the east side of the Andes. The company, financed by Southern California capitalists, sent Robert Moran there to handle operations and geological work.

Agua Caliente 2 increased its yield to 275 barrels daily two days after completion and subsequently to 640 barrels daily. The well was completed in 10 days drilling time.

Agua Caliente 1, the first test, had encountered favorable showings at 1200 feet, passing from that point into a tough limestone formation which the bit refused to drill. Drilling was suspended and the rig skidded to the second location. The property is 100 miles from the nearest oil field in Peru.

Alberta production was half million in January

Oil production from Alberta, Canada, wells in January, 1939, was 515,539 barrels, under proration. The majority of this volume, 462,758 barrels, came from Turner Valley limestone oil wells. An additional quantity of 49,296 barrels was produced by Turner Valley limestone gas wells, and 796 barrels by Turner Valley's shallow oil wells.

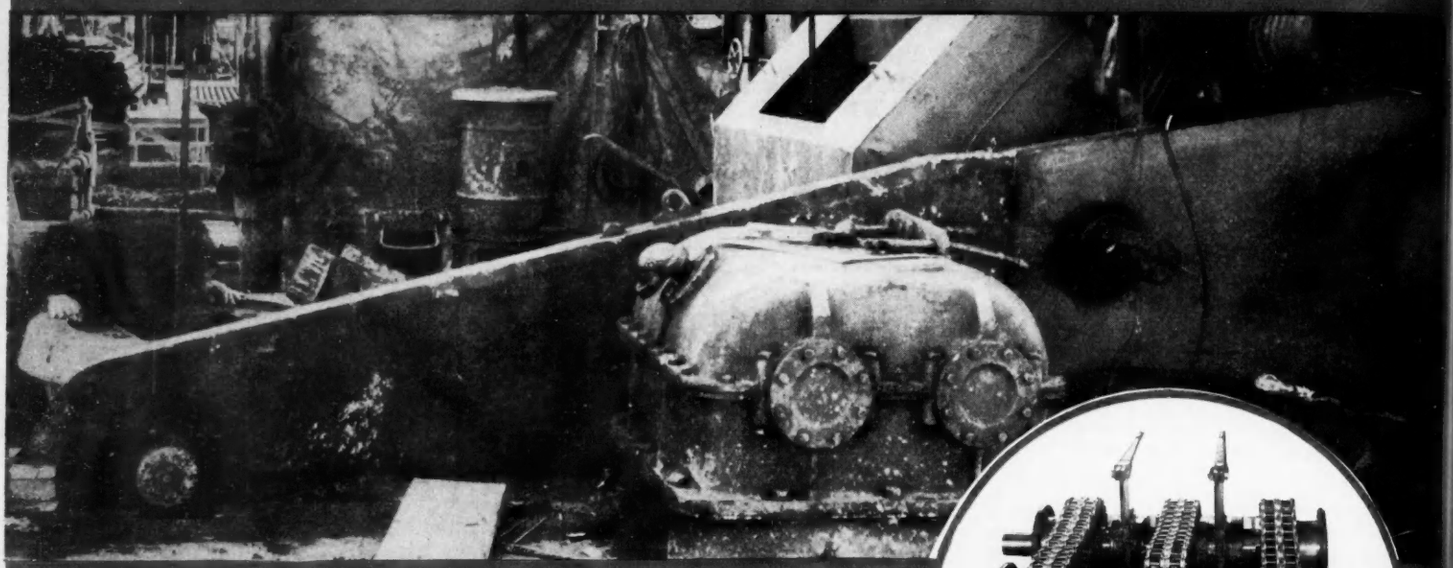
Red Coulee light crude totaled 1206 barrels during the month, while Wainwright heavy crude amounted to 524 barrels. Miscellaneous production accounted for the remaining 959 barrels.

Argentine's production and stocks in December

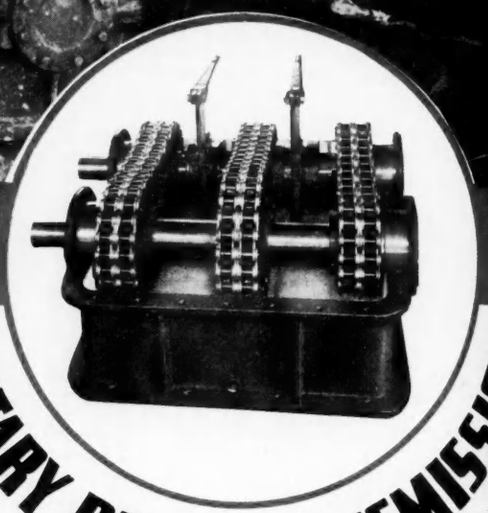
According to the Ministry of Agriculture, Argentine's production of petroleum and derivatives for the month of December, 1938, and stocks on hand as of December 31, 1938, were as follows:

Products	Stocks as of Dec. 31, 1938 (Cubic Meters)	Production in Dec., 1938 (Cubic Meters)
National Petroleum	298,788,746	.....
Foreign Petroleum	74,871,000	.....
Fuel Oil	534,471,437	116,789,914
Diesel Oil	49,808,418	27,480,736
Gas Oil	10,670,696	16,076,887
Asphalts	4,406,470	2,712,000
Oils	22,634,561	5,198,770
Gasoline	107,925,353	106,459,582
Kerosene	33,952,574	16,633,413
Aviation Gasoline..	1,709,788	949,000
Turpentine	590,844	477,003
Total	1,139,829,857	292,777,315

Increased SLUSH PUMP CAPACITY - Reduced BIT BILLS -



"It's made an entirely different Rig out of our outfit", Says the owner of this mechanical Rig, who has used the Transmission on several deep holes and a number of shallow ones.



with the GUMBO BUSTER ROTARY DRIVE TRANSMISSION

A conventional type mechanical rig (using any draw works which does not provide multiple speeds to the Rotary) powered with compounded engines, cannot in most formations, utilize the full power of the engines for maximum Slush Pump capacity without rotating the drill pipe too rapidly. As a result Slush Pump power may be sacrificed at one end and Rock Bits at the other.

By adding a Gumbo Buster Transmission, which can be used on any rig without so much as altering a chain guard, all the engine power available (excepting the small amount required to drive the rotary) can be used to obtain the full capacity of the slush pump. The speed of the Rotary, which is controlled entirely by the transmission, can be varied to suit drilling conditions.

Greater Slush Pump capacity adds to the Rig capacity, while controlled Rotary speed lengthens the life of Rock Bits, Chain, Drill Pipe and Tool Joints—increasing profits at both ends.

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MEN IN THE INDUSTRY'S NEWS

R. ELMO THOMPSON NAMED VICE PRESIDENT AND DIRECTOR OF SUNRAY OIL CORPORATION AND SUBSIDIARY

»

HAS HAD LONG CAREER AS BANK OFFICIAL IN TULSA

»

R. ELMO THOMPSON became executive vice president of Sunray Oil Corporation and its operating subsidiary, Sunray Oil Company, March 15. The announcement of his selection contained the information that he will become a director at the meeting of stockholders April 10.

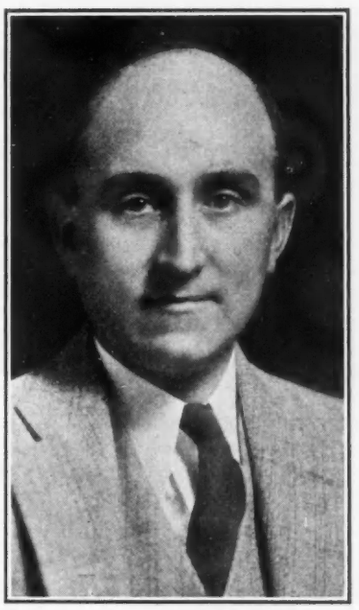
At the time of his election he was vice president and director of First National Bank and Trust Company, Tulsa. He will continue to serve as a director of the bank.

Thompson is a native of Nashville, Tennessee. He attended Vanderbilt University there and upon graduation in 1917 enlisted as a private in the army. At the end of the war he was a captain in field artillery. He returned to Vanderbilt University and was graduated in law in 1920.

In the fall of 1920 he began the practice of law in Tulsa. Six months later he joined the legal staff of the Exchange National Bank and in 1926 he became a vice president of that institution in charge of the correspondent bank department. He remained with that bank and its successor, National Bank of Tulsa, until May, 1925, when he became vice president of First National Bank of Tulsa.

Much of his work in banking circles has concerned the finance of oil development.

He has been active in the American Bankers Association, the Reserve City Bankers Association and the Oklahoma Bankers Association, in which he is now chairman of the executive committee. He is president of the Oklahoma Business Council.



R. ELMO THOMPSON

STANLEY BLANCHARD, who has been associated with J. C. Shaffer, Oklahoma City, has resigned and will engage in consulting geological work.

H. A. MEYER has resigned as managing director of the Kansas Independent Oil & Gas Association, Wichita. Meyer was selected for the position when the organization was formed more than a year ago. He left Wichita for a business trip to the Pacific Coast and will return to his home in Independence.

E. B. LYMAN, editor of The Lamp and a member of the public relations department of Standard Oil Company (New Jersey), was a visitor at headquarters of the Carter Oil Company, Tulsa, last week.

R. D. PARKER, senior member of the Texas petroleum engineering firm of Parker, Knode and Boatright, was in Calgary, Alberta, last week to survey the West Canadian oil situation with a view to establishing an office there. The office, if established, will be placed in charge of Dr. B. B. Boatright, expert for the provincial royal commission currently probing the Alberta oil industry. W. F. Knode, chairman of the Alberta Petroleum & Natural Gas Conservation Board, is also a member of the firm.

WALTER E. SCHWED, Norman E. Bradley and G. Venrick last week organized the Marlene Oil Company as a Wyoming corporation. Headquarters have been established at Lusk.

DR. FRANK A. MELTON, of the University of Oklahoma, discussed "Shore Processes and Their Relation to Sand Bodies as Illustrated Along the Atlantic and Gulf Coasts by Aerial Photography" before the Oklahoma City Geological Society last week.

R. B. CREAGER, Brownsville, Texas, operator and Republican National Committeeman, was in Evansville, Indiana, last week where he plans to establish an office.

CHARLEY WELIS, Kansas district geologist for Carter Oil Company, has returned to Wichita after temporarily replacing Bob Currans, chief scout at Tulsa, who was engaged in other work.

JOHN E. WINSLOW, St. Louis, chairman of the Mid-Continent Oil & Gas Association's standing committee on social security matters, was the principal speaker at the Petroleum Accountants Society of Kansas meeting in Wichita last week.

B. L. THORNE, Canadian oil and mining engineer, was named president of the Canadian Institute of Mining & Metallurgy during the organization's annual convention in Montreal last week. At present mining engineer with the department of natural resources of the Canadian Pacific Railway at Calgary, Alberta, he has made detailed studies of the railway company's petroleum, natural gas and coal holdings in Western Canada.

R. C. KEEFER, president of Leggett Drilling Company, returned to the Evansville, Indiana, office of the company last week following a trip to Dayton, Ohio.

LEO FORTIER, formerly district geologist in Kansas for Shell Petroleum Corporation, has returned to Wichita after a year in California, and opened an office in the Union National Bank building to do consulting geological work.

C. H. KEPLINGER, production engineer for Shell Petroleum Corporation at Wichita, discussed "Fluid Level Draw Down Method for Potential Determination of Arbuckle Dolomite Wells" before the McPherson chapter of the American Petroleum Institute last week.

W. C. MILAND, drilling contractor now operating out of Mattoon, Illinois, plans to shift his headquarters to Evansville, Indiana.

J. C. MILLER, Nick Shiarella, W. R. Hilderbrand and Larry Marsh have organized Basin Drilling Company with headquarters at Owensboro.

E. E. BROWN, treasurer of Manning & Martin, drilling contractors with headquarters in Denver, was in Casper, Wyoming, last week.

MAYNARD J. DAVIES, Alberta oil operator and head of Davies Petroleums, Ltd., pulled a "Frank Phillips" last week when he donated $350 to a Calgary boy scout troop to aid the organization in lifting the mortgage from its clubhouse. The Tulsa oil man has become known for his financial help to boy scout organizations in Oklahoma and other parts of the country. He is fondly remembered by the scouting organization at Madison for his aid during his stay in the Wisconsin city while a member of the group of oil company officials undergoing trial in the government's oil conspiracy case.

W. J. BRENNON, W. B. Blackmon and H. S. Williams last week organized Bolivar Oil Corporation and established headquarters in Taylorville, Illinois. The firm will engage in development activity in the Illinois basin area.

JAMES I. HILL was named president of Empire Crude Oil, Ltd., Alberta oil firm, when directors held their annual meeting in Calgary recently. Other officers are R. G. Smith, vice president; B. C. McMillan, treasurer, and E. R. Lovewell and James H. Boyce, directors. C. S. Blanchard, K. C., was appointed secretary.

W. H. CHESNEY, Vancouver, was added to the board of Pacalta Oils, Ltd., Canadian operating firm, when shareholders held their annual meeting at Vancouver, British Columbia, last week. Directors re-elected were W. S. Hynes, Elmore Meredith and R. F. Whalen, all

of Vancouver, and T. M. Mongovern, Toronto. The firm is engaged in development of the Battleview structure of Alberta and holds acreage in the vicinity of Home Oil Company's strike in north Turner Valley.

JOE BANDER and Earl Hollandsworth, independent operators whose test recently confirmed the Cooper pool of Gibson County, Indiana, returned to Evansville last week from a visit in Longview, Texas.

J. E. MOORHEAD, executive secretary of The Pennsylvania Grade Crude Oil Association, returned to his Oil City home from Florida last week with his right ankle in a cast. He fractured a bone when he slipped on a boat while fishing.

A. E. CROCKETT, special representative of Jones & Laughlin Steel Corporation, Pittsburgh, spoke before the semi-monthly meeting of the Tulsa Purchasing Agents Association, March 14. It was the tenth time he had appeared before the organization.

R. H. KER, president of Home Oil Company, Ltd., Vancouver, was in Calgary, Alberta, last week.

R. P. MOSCRIP, mechanical engineer for Shell Petroleum Corporation, Wichita, and Carl White, Franks Manufacturing Company, Tulsa, will present a paper on "Slim Hole Drilling" before a meeting of the Wichita chapter of the American Petroleum Institute in the Allis Hotel Monday, March 20, at 8 p. m. Arthur Harvey, sales manager for Allsteel Products Manufacturing Company, will lead the discussion following presentation of the paper.

WILLIAM CLARK, Dorothy E. Clark and Preston McAvoy, all of Newcastle, Wyoming, last week organized Bill Clark Drilling Company.

ORAL P. KEENEY, Wolverine-Empire Refining Company, was re-elected chairman of the Venango County division of the Associated Petroleum Industries of Pennsylvania, when the county organization held its annual meeting in Oil City last week. Other officers named are James C. Marshall, vice chairman, and William J. Callahan, secretary, both of Oil City.

AXTELL J. BYLES of New York, president of the American Petroleum Institute, lingered for two days in Houston, Texas, last week on his way to Austin, where he attended the state oil and gas proration hearing, and San Antonio, where he attended the spring meeting of the Southwest District of the A.P.I.

H. S. McQUEEN, assistant director of the Missouri Geological Survey, Rolla, will speak before the meeting of the Tulsa Geological Society March 20. He will discuss the Forrest City Basin, a subject which he will present later in the week at the annual meeting of the American Association of Petroleum Geologists in Oklahoma City.

EDWIN C. CATLETT, who had been in the oil business 12 years, died March 14 in Tulsa. He was associated with his brothers, John C. Catlett and W. Fitzhugh Catlett, both of Tulsa. Funeral services in Tulsa March 16 were followed by burial at Pawnee, Oklahoma.

A. S. GULSTON, connected with Compania Mexicana de Petroleo "El Aguila" S. A. in Mexico since 1917, and for the past few years general field superintendent of the northern division, has accepted a position with the Trinidad Leaseholds Company in Caracas, Venezuela.

JAMES C. LINDSAY, for a number of years past assistant to the administrator of Cia. Mexicana de Petroleo "El Aguila" S. A. at Tampico, Mexico, has resigned. He is at present visiting in Houston, but intends to make his home in San Francisco, California.

HERBERT W. MACK, for the past 19 years with the Mexican Gulf Oil Company in Mexico, principally in the production and pipe line departments, is enroute to eastern Venezuela, where he will act as chief oil dispatcher for Mene Grande Oil Company. Mack visited Gulf Oil Corporation's offices in Houston and Pittsburgh, and also spent several days in Boston visiting relatives, before sailing from New York for La Guaira.

PAUL W. PITZER, member of the producing firm of Pitzer & West and an official of Chemical Process Company, suffered a fractured leg March 7 when hit by an automobile in Breckenridge, Texas. He was later moved to the St. Joseph's Hospital, Fort Worth.

V. E. COTTINGHAM, who resigned February 13 as director of production for the Texas Railroad Commission to become full-time chairman of the North Basin Pools Engineering Committee, has established an office for the latter in the Petroleum building, Midland. A field office has been temporarily located in the Yoakum County portion of the Wasson field. Max D. Hendrick and Tommy Post, petroleum engineers who were formerly with the railroad commission at Kilgore and Pampa, respectively, have been added to Cottingham's staff.

A. E. CHEYNEY, district geologist for Ohio Oil Company in Kansas, has been transferred to St. Joseph, Missouri.

W. S. ARTHURS, chief scout of Skelly Oil Company, is convalescing at his home in Tulsa following an operation.

LOUIS DES JARDINS, Tulsa geologist, discussed "Geologic Mapping of Oklahoma Formations and Aerial Photography" before the Tulsa Geological Society the evening of March 7.

PAUL PHILLIPS, independent operator, of Wichita Falls, Texas, has established offices in the Hulman Building, Evansville, from where he will carry on activities in the southern Illinois basin area.

D. H. BINGHAM and Harris Allen, geologists; M. J. "Dutch" Miesse, land man, and George Bell, scout, comprise the principals of Phillips Petroleum Company's new office at Owensboro, Kentucky.

GLENN STALEY last week resigned as a deputy of the New Mexico Oil Conservation Commission. He will continue as oil umpire for Southeastern New Mexico.

T. E. COALE, V. E. Jackson and Fred Coale last week organized Southern Asphalt & Petroleum Company as a Texas corporation. Headquarters have been established at Ft. Worth.

DIED:

ROBERT LYONS HAGUE, 59, vice president in charge of the marine department of Standard Oil Company of New Jersey, died of a heart attack March 8 in his New York City apartment.

Hague commanded the largest privately owned fleet of oil tankers in the United States and one of the largest in the world, comprising 205 vessels with a total dead weight tonnage of 953,999. Four days before his death he attended the launchings of two high-speed tankers at Kearny, New Jersey, and Chester, Pennsylvania.

He had risen from a deck hand on a fishing smack to a dominant position in the American Merchant Marine, becoming associated with Standard Oil Company in 1909. He became manager of the company's fleet in 1920.

Hague on January 21 gave the order which sent the tanker Esso Baytown to the rescue of the 11 survivors of the Imperial Airways flying boat Cavalier when the British flying boat was forced down in the Atlantic Ocean en route to Bermuda.

Surviving are his wife, Mary Lewis, former Metropolitan Opera Company soprano, a brother, Cuthbert, and his mother, Mrs. Harriet Davis Hague.

THOMAS J. HUNT, 30, member of a rotary drilling crew at work on a wildcat near Gilmer, Texas, was killed March 9 by a falling crown block. He was an expert softball player, and resided near Greggton, Texas.

R. E. (BOB) WOOD, 51, inspector for the oil and gas division of the Texas Railroad Commission, died March 10 at Kilgore, Texas, of a heart ailment.

Thompson to address East Texas A.P.I.

The next regular meeting of the East Texas Chapter of the American Petroleum Institute, Division of Production, will be held in the Kilgore (Texas) High School auditorium at 8:00 p.m. Tuesday, March 28, 1939.

Ernest O. Thompson, member of the Texas Railroad Commission and Chairman of the Interstate Oil Compact Commission, will discuss "The National View of the Oil Industry."

G. Raymond, chief engineer of Black, Sivals and Bryson, Inc., of Oklahoma City, will present an illustrated talk on "The Failure of Pressure Vessels in the Oil Field." The usual high class entertainment will be presented.

The A.P.I. dinner will be held at the Kilgore Hotel at 6:15 p.m. On account of the limited facilities, the attendance at the dinner will be limited to 150. No tickets will be sold at the dinner or reserved; tickets are now on sale at the office of the Secretary, Box 56, Kilgore, Texas, for $1.25.

THE WEEK'S NEWS SUMMARIZED

Interstate Compact

The Interstate Oil Compact apparently will be not only extended but also strengthened as it reaches its scheduled expiration this year.

At the open meeting of the Interstate Oil Compact Commission at Austin, March 16, numerous oil men and official observers from non-member states commended the constructive work that has been done through the compact and strongly urged a continuation and expansion of that work.

Colonel Ernest O. Thompson, chairman of the commission and a member of the Texas Railroad Commission, asserted that the compact has made unnecessary the federal control that has been advocated by the National Resources Committee, of which Secretary of Interior Harold L. Ickes was chairman. Thompson declared that the compact is achieving in the preferable, democratic way the objectives, such as conservation, which would be sought through federal regulation.

The present compact embraces six members: Oklahoma, Kansas, Texas, New Mexico, Colorado, Illinois. The legislatures of three of those states, Oklahoma, New Mexico and Colorado, already have authorized renewal of the compact. The representative of Kansas gave assurance that state could be depended upon to cooperate, and similar assurance was given regarding Texas. Illinois has hesitated to renew its membership, as it appears that the state will not enact an oil conservation law; but continued participation in the compact has been invited nevertheless, and it is believed that Illinois may remain a member.

Moreover, a new member, Arkansas, is expected to join, as that state recently enacted a new conservation law. The participation in the compact will be sought, and probably gained, in a special session of the legislature.

At the meeting last week were observers from California, Arkansas, and Pennsylvania, who conferred and deliberated with official representatives of the member states. And it was calculated that those representatives ond observers represented 93.86 percent of the daily average crude production of the United States, on the basis of output in the week ended March 4.

The compact commission plans to clarify and enunciate principles and standards for which it stands and which it is actively promoting, and a committee from among its members will be given this special responsibility, aimed at strengthening the prestige and effectiveness of the compact.

Curtailment

Continued effective curtailment of crude oil production for the United States as a whole was generally anticipated following the proration hearing of the Texas Railroad Commission at Austin March 15.

For most indications pointed to a continuation of both Saturday and Sunday shutdowns of Texas fields, despite the fact that the question had been raised as to the practicability of restoring one or both days of production.

And it was assumed that continued strict curtailment in Texas would assure similar moderation in most of the other leading producing states.

The expectations that the Texas Railroad Commission would continue Saturday and Sunday shutdowns were based on the fact that most of the witnesses at the hearing advocated no over-all increase in the state allowable.

It was pointed out that market requirements would not justify any material increase in crude production, and various witnesses urged that the shutdowns be continued at least 60 or 90 days.

Washington

Incorporation of the Connally "hot" oil act in the permanent statutes of the country has been given the blessing of the Senate Finance Committee, short-cutting the usual procedure for the handling of legislation by refusing applications of the independent marketers for hearings.

In the opinion of members of the committee, everything that can be said about the "hot" oil act has been said in previous hearings.

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Oil at the Capitols

Senate gets favorable committee report on hot oil bill . . . California congressman protests move on tide lands . . . Illinois to tax leases

Senate committee approves Connally Act extension

Rejecting the application of the National Oil Marketers Association for hearings on the measure, the Senate Finance Committee on March 15 voted to make a favorable report on the Connally bill making the "hot" oil act permanent law.

The committee's decision was reached at an executive session, at which consideration was given a letter from Secretary of the Interior Harold L. Ickes, approving the legislation and declaring that the temporary law which has been in effect for the past four years "has been a definite forward step toward the conservation of petroleum, an irreplaceable national resource, through cooperation between the oil producing states and the federal government."

The secretary pointed out that the proved oil reserve of the United States is not equal to that of the remainder of the world but that annual consumption of petroleum here exceeds the total of all other countries and "we are pressing on our proved reserve of petroleum more than the rest of the world and we may consequently face an oil scarcity before there is a corresponding shortage abroad."

"A continuous stream of reasonably priced petroleum products is essential for the maintenance of the national defense and our economic structure," he declared. "The consumption of gasoline, Diesel oil, fuel oil and lubricating oil has become so commonplace that few people realize that all of the airplanes, virtually all of the automobiles, of which there are now about 30,000,000, a large number of locomotives, and virtually all of the United States merchant marine and navy are driven by petroleum products. The industrial life of this country, including agriculture, our metropolitan centers and their suburban areas, our towns, large and small, are geared to the use of petroleum products. In our national defense, petroleum is not only vital to the military forces but to the civil and manufacturing and transportation facilities which support or supplement the army and navy. It is estimated that at current rates of consumption a national emergency would require an additional supply of 800,000 barrels of petroleum daily."

The six states which have adopted conservation legislation account for about 70 percent of the national output, with another 24 percent coming from California, Illinois and Michigan, which have similar laws under consideration. All of these states, Secretary Ickes pointed out, are given federal support of their conservation program through the Connally Act.

"This procedure is preventing waste and increasing the efficiency of oil production in the United States," he asserted. "Our petroleum supply is being maintained to an important degree by improvements in methods of production, which make possible an increased recovery of oil from our proved reserves. By making certain that we produce oil in the United States more efficiently and with a higher recovery factor than in other countries, our oil supply can be brought closer to a parity with the oil resources of the rest of the world and we can thus postpone the time when we will have to depend upon foreign supplies or alternative fuels, both at higher prices.

"In brief, it is my opinion that the Connally Act, by giving strong support to the oil and gas conservation laws of the oil-producing states, has made a substantial contribution to the conservation of the oil and gas resources of the nation and also that the federal and state responsibilities in this respect have been coordinated without placing any undue burden upon the consumer of petroleum products. In fact, I am convinced that the consumer will continue to benefit if the policy announced in the Connally Act of making adequate supplies of oil available at reasonable prices is adopted as permanent legislation of the United States.

"Accordingly, I favor the continuance of the Connally Act as a step toward the protection of our needs for oil for the national defense and for the general welfare. The gains so far accomplished by some of the states and by the federal government should not be lost and future legislation should be built upon this foundation of state and federal cooperation."

The bill was formally reported to the Senate March 16 by Senator Connally, who declared it was evident to the committee that "if the support accorded the oil-producing states through the act of February 22, 1935, were to be withdrawn, much of the progress toward conservation achieved during the past four years would be lost and the oil industry would soon face the disturbance which it encountered before this measure was enacted.

"Although some of those who objected to the measure two years ago and were fully heard by your subcommittee at that time continue to object, your committee is convinced that the preponderant opinion of state conservation authorities and of those engaged in the oil industry favors the permanent enactment of the law," his report declared.

"Prior to the enactment of this law, there were many instances in which there was an almost total disregard of the orders issued by the state conservation authorities, with the oil produced in violation of state laws finding its principal market in interstate commerce. As a result the authority of the state was subjected to challenge by some of those who shipped in interstate commerce. So excessive was the production of oil in violation of state laws that many operators in areas of settled, or pumping, production were faced with the prospect of being forced to abandon their properties, due to their inability to compete with those who had no regard for the laws of the state. The fields in which such excess oil was produced were subjected to operating practices which were extremely wasteful and the loss of petroleum reserves in the settled areas was threatened.

"During the four years which have elapsed since the act was approved, there has developed a widespread recognition of the fact that orderly and efficient methods of production, in which due regard is given to the maintenance of reservoir energy and the retention of gas in solution with the oil, make possible the increased ultimate recovery of oil from the underground reservoirs," the report asserted. "The great East Texas field is a noteworthy example. It has been estimated that the conservation efforts of the State of Texas, to which the act of February 22, 1935, gives support, have added 2,000,000,000 barrels to the quantity of oil which will be produced from that field. Production in the East Texas field, as in the other oil fields of Texas, is regulated in accordance with the physical characteristics of the field so that the reservoir pressure may be preserved and that oil may be withdrawn without waste."

Illinois would force oil drilling through taxation

Suggestion that local taxing authorities place a valuation of $10 an acre on all idle leaseholds in producing areas of the Illinois oil basin in order to force immediate development of such land for the benefit of the people of the state was made by Acting Governor John Stelle before a meeting of county tax officials in Springfield last week.

The meeting follows a ruling of Attorney General John E. Cassidy that under Illinois law leases and royalties are taxable.

Stelle told the conference that major oil companies hold at least 90 percent of the leases in producing areas and "are content usually to sit on the land and begin operations at their leisure."

Qualifying his remarks with a statement that the matter is one for local officials to decide and that the state "has no intention to levy a petroleum tax at this time," the acting governor also recommended an assessment of $1,000 an acre on producing sites with wells yielding at least 50 barrels daily on an average 20-acre location.

"Personally, I am for the people of the state in this matter because I know they are entitled to the development of every acre of this land," Stelle said. "Its economic benefits penetrate every corner of the state and in reality will aid the entire commonwealth. A leasehold is worth something because of its speculative value. In Illinois we hold it is assessable because it is real property."

Dr. Alfred H. Bell, head of the oil and gas division of the State Geological Survey, told the conference that "leases located

outside of known favorable oil structures have a small chance to produce oil and should be in a different class for assessment purposes than leases in proved fields."

T. M. Cain, Dallas valuation engineer, said the "basic theory in Texas is essentially similar to the plan now being followed in Illinois. We consider all royalties as part of real property.

California congressman protests tideland seizure

Seizure by the United States of the off-shore oil fields will mean a direct loss to California of $75,000 a month in royalties and an irreparable indirect loss, members of Congress were told last week by Representative John H. Tolan (Dem., Cal.).

In a memorandum distributed among the members, Tolan urged support of California's opposition to pending legislation calling upon the Attorney General to assert the right of the federal government to title in the oil lands lying between low-water mark and the three-mile limit off the coast of the state.

It was pointed out that appropriation of the lands by the government would impede the issuance of bonds for harbor improvement, affect school and road activities and work other hardships.

The memorandum was distributed as the House Judiciary Committee prepared to hold hearings on the legislation March 22.

The California off-shore lands will be made a test of the government's title to coastal lands lying between low-water and the three-mile limit, it was indicated as the date of hearings before the House Judiciary Committee approached.

The committee's hearings will be confined to consideration of the Hobbs (Dem., Ala.) resolution which is confined to California, although other measures asserting the government's title to all off-shore lands, are pending. At the other side of the Capitol, Senator Nye (Rep., N. Dak.), author of a resolution asserting general title which was passed by the Senate in the last Congress, has superseded a similar measure, introduced this year, by a resolution relating only to California.

Meanwhile, California interests, thoroughly aroused to the possibilities of actment of the legislation, are charging that the effort to take the off-shore oil fields of the state is but the "entering wedge" and that, if successful, the government will assert title to all off-shore lands, even including those of the Gulf states which claim ownership to a distance of three leagues.

As soon as the House Judiciary Committee concludes its hearings, the Senate Public Lands Committee will consider the same subject as presented in the Nye resolution, and has called a hearing for March 27.

Delay hearing on Texas refinery control legislation

The House Committee on Oil, Gas and Mining has postponed indefinitely its hearing which was scheduled for March 15, on the bill to give control of Texas refineries to the Texas Railroad Commission.

During the course of the statewide hearing last week, members of the commission questioned from the bench operators who appeared, asking whether they thought refinery control by the commission advisable.

Interstate Compact

Meeting at Austin inaugurates fight to prevent encroachment of federal control advocates, while state and company officials commend its progress

The Interstate Oil Compact Commission, at its meeting in Austin Wednesday and Thursday, began a fight to prevent federal control. Reports from Washington which were circulated privately at the meeting indicated a strong movement among federal authorities to pass a bill regulating the oil industry.

Compact Commission Chairman Ernest O. Thompson read from a report made by the Natural Resources Committee recommending that federal regulations be provided for wells producing oil which enters interstate commerce; however, the report asserted that oil in intrastate commerce, produced from wells in the same fields, would undoubtedly affect interstate oil. The natural conclusion from the report was that, if operations of one well in a field are to be regulated, then operations of all wells must be regulated if effective conservation methods are to be applied.

The Compact Commission adopted a motion naming a committee to provide standard regulations governing operations of all wells and following closely the recommendations in the federal reports. Thompson was named chairman of the committee which is to report to the compact at a special meeting.

Since the next regular meeting of the compact is to be held in Santa Fe, New Mexico, some time in June, it is likely that the special meeting will be held prior to that time so that, in the event federal control should come up before Congress, the oil states would be prepared to defend their position.

The plan contemplates the adoption of uniform operating practices as a part of the policy of the commission and members will attempt to establish these regulations in the various oil producing states as local operating conditions may warrant.

Russell Brown of the Independent Petroleum Association of America asserted that Washington bureaucrats, or at least the "thinking" authorities, were regarding the compact closely and studying its activities sympathetically. He admitted, however, that there was a group deriding the compact activities and charged that it was a makeshift organized to prevent federal control.

Brown was enthusiastic about the meetings such as those held by the Texas Railroad Commission in Austin last week where were gathered the best minds of the petroleum industry, interested only in developing a program which was to do the greatest good for the greatest number.

Axtell J. Byles, president of the American Petroleum Institute, told the commission that control of the oil industry must succeed through the combined work of the compact and other regulatory bodies, as well as the operators in the business. Failing in this democratic control of the oil industry, then control will be extended to other businesses, he predicted. The United States, Byles declared, is too big a country to be dominated by a bureaucracy.

In order to avoid federal enforcement, Byles charged the oil producing states with revising their constitutional statutes to include the most modern conservation methods. He recommended further that they legalize permissive agreements similar to those advocated some years ago by the American Bar Association. As conditions are now, it is impossible for one refiner to be informed about the program of another, and Byles suggested that this might be one of the principal causes for the breakdown now resulting from excessive production of gasoline stocks. He indicated that, had full information been available to all members of the industry, greater restraint would have been exercised. Bad market conditions, he thinks, would disappear if the permissive agreements were operated now.

With public officials sitting as judges and referees in the conferences between refiners, Byles expressed the opinion that the public would be well protected. He pointed out that there is now on hand in reserves enough oil to supply this generation, and probably the next, but that the public would demand more than this, and it is up to the officials to see that the industry supplies oil at a fair price to the public. By a fair price, Byles indicated he thought the industry was entitled to a reasonable profit and that the public should be willing to pay that return.

Slightly better conditions for the remainder of 1939 were predicted by A. G. White of the Bureau of Mines. He stated that during the first quarter of 1939 market demand exceeded the early estimates, because of exceptionally good weather conditions and a decided upturn in the fuel market. He expects sales of residual fuel to be a material aid during the second quarter of the year in liquidating excessive inventories. White expressed the opinion that the unusual fuel oil demand is due, in part, to low prices and, in part, to improved conditions in industry. While much of the fuel oil inventory is in California, the demand in the East is sufficient to help materially.

During the month of April, White estimated that gasoline demand would be up about 5.5 percent and that this gain will last through the entire second quarter of the year. For the nation he expects a demand of 3,430,000 barrels daily which is 30,000 barrels above

the estimate of Joseph E. Pogue, economist for Chase National Bank.

No sound prediction of export demand could be made, White said, but it is now down to about three-fourths of the demand for the same period of 1938. Asked what he thought gasoline stocks should be on September 1, White estimated that between 20,000,000 and 24,000,000 barrels should be absorbed by the end of the consuming season. He estimated that 11,000,000 or 12,000,000 should be used during the second quarter of 1939.

Attending the hearing were representatives from Arkansas, California, Louisiana and Pennsylvania. Arkansas has recently indicated a desire to join the compact, and O. C. Bailey, representative of the Governor, said he thought the state would join when the legislature met again.

Charles Orr or California told the commission that while there was still no law permitting curtailment of production in that state, voluntary reductions have been made during the past two months and he was hopeful that a more conservative program might follow. Each of the six states, members of the compact, were represented at the hearing.

Government dismisses five Madison trial defendants

The federal government's prosecution of major oil companies and oil company officials, started with the first of a series of indictments at Madison, Wisconsin, in July, 1936, was further simplified last week when federal court records revealed charges against five individual defendants had been dropped on motion of government attorneys. Four of the group had been named in two indictments, the second returned in December, 1936, when validity of the charges brought five months earlier had been challenged.

No reason was given for the government's motion to dismiss.

R. G. A. Van der Woude, New York, president of Shell Union Oil Corporation, had been named in the first indictment, but was omitted when a new grand jury returned a corresponding indictment months later.

D. W. Harris, general manager of the Louisiana Oil Company, Shreveport, Louisiana, was not brought to trial in December, 1937, with others similarly indicted, and during the course of the trial charges against his company were dismissed.

Bernard L. Majewski, vice president of Deep Rock Oil Corporation, Chicago, and Keith Fanshier, petroleum editor of the Chicago Journal of Commerce, testified before the grand jury which returned the indictments, and were subpoenaed but not called as trial witnesses.

John A. Brown, president of Socony-Vacuum Oil Company, New York, had been granted a continuance.

The dismissal orders were signed by Federal Judge Patrick T. Stone, in whose court the indictments were returned, and by Federal Judge Walter C. Lindley, of Danville, Illinois, to whom jurisdiction of the oil conspiracy cases recently was given. Judge Lindley will open trial at Madison October 2 of a group of oil companies and company officials who had been granted new trials by Judge Stone at the conclusion of the first case in January, 1938.

Allowable Picture

Continuation of two-day shutdown in Texas seen as an absolute essential by economists before Austin hearing . . . Gasoline stock data given

Economists, bankers and oil operators assembled at the statewide proration hearing in Austin last week and agreed unanimously that Texas, as a state, should not produce more oil than is being allowed now. At the time the hearing opened, the allowable was approximately 1,370,000 barrels daily, and witnesses told the commission that this rate of production should be sustained for a period of 60 days and that a 90-day order would probably be wise. The hearing was the largest that has been held in Austin since the early days of proration when battles over the East Texas field were fought regularly.

Included in the group were outstanding figures in the nation's banking and economic fields, as well as some of the most important oil executives. While many of the operators asked for increases and abandonment of the Saturday and Sunday shutdown, they qualified these requests with the statement that they wanted the change if it could be done without disturbing the total allowable. In other words, they proposed that increases granted to them be obtained through deductions from allowables assigned to other fields.

Economists and operators estimated an increase in consumption of 4 to 7 percent during 1939. The majority opinion was that the increase would amount to 6 percent, approximately. Because of this small increase in demand and the large stocks of finished products on hand, witnesses expressed the opinion that the normal increase in allowable resulting from assignments made to newly completed wells would absorb the entire market increase.

They likewise counseled close control of production, at least for the first 60 days of the summer consuming season, until the market had absorbed 10 or 12 million barrels of gasoline.

Joseph Pogue, petroleum engineer, economist and vice-president of Chase National Bank, New York, expressed the opinion that the commission should make no change in its order for a minimum of 90 days. He pointed out that in 1938 the nation consumed 3,324,000 barrels daily, and he estimated that the demand would be up 6.2 percent this year.

While he thought it would average 3,440,000 barrels for the year, the demand for April, May and June would be no more than 3,400,000 barrels. Although this is higher than the current production figure, Pogue anticipated assignments of allowables to new wells would absorb any increase in demand that might occur during the 90-day period.

In the course of his discussion relating to the recent price decline and the trend of prices in spite of the fact that production was well controlled, Pogue expressed the opinion that increased producing capacity of the industry was the prime factor affecting the price break—a factor more important than limiting production to demand under the circumstances now. He pointed out that the industry had drilled a vast number of new wells by which it had vastly increased its "capacity" to produce oil, intimating that the mere ability to produce quantities of oil far larger than the market could possibly absorb had the same effect on the market as did quantities of oil in storage above ground.

The outstanding statement by Pogue, however, and the one in which operators exhibited most interest, was his argument that it was unlikely that Texas could ever again produce 7 days a week until the marginal well statute had been revised. Pogue refused to say that he meant that it should be revised downward, but this was an obvious conclusion. He explained his statement by pointing out that, as more wells are drilled, and the market remains relatively static, the allowance per well must be decreased steadily, and ultimately there will be assigned to each well only its marginal allowance.

Thus the only way that wells could be cut back beyond that point, he intimated, was by closing them in for one day or more of each week and not allowing them to produce all the allowable assigned.

Of course, if the minimum allowances provided in the marginal well statutes were reduced, it would then be possible for the commission to allow production every day in the week, since the total daily allowable would not be increased. These assumptions were made on the theory that the commission would continue its policy of limiting production to market demand.

Senator Joe Hill of Henderson and F. W. Fischer, Tyler attorney, attacked the statements of Pogue in respect to the marginal well law. It was apparent that they feared he was advocating a program which would cut the 20-barrel minimum for wells in the great East Texas oil field, a plan to which they were unalterably opposed.

Roeser Sounds Warning

As the hearing began, Charles Roeser, president of the Independent Petroleum Association of America, warned the commission against repeating the mistake it made in January, 1937, when, with what he termed too much optimism, the Texas allowable was increased 150,000 barrels a day. Subsequently it was found the market did not absorb the additional oil and the carry-overs which were developed then have continued. It was this condition that required reductions in allowables during 1938, during which time some

30,000,000 barrels of crude was withdrawn from storage.

Roeser pointed out that there was in some quarters a feeling of optimism, which he felt is not justified. He pointed out that there is still pipe line proration in at least three states, that there are unconnected wells, excessive storage of gasoline and different prices paid for the same grade of oil in the same field. While these conditions exist, the industry cannot be in a settled condition, he declared.

There is in storage 34,000,000 barrels, and more oil in over-all stocks than was held a year ago, and the only progress, he said, has been in the reduction of crude stocks. Refiners were to blame in part for these increases.

Roeser agreed with Commissioner E. O. Thompson that the refineries had failed to regulate their runs and said he thought "a little control did not hurt them."

Thompson pointed out that during the period regulatory bodies had been exercising the utmost in control of production, refineries had failed to restrain themselves and "have not shown the business statesmanship that might be expected of them."

Question on Refinery Control

During the course of the hearing Thompson asked almost every witness whether he favored giving to the Texas Railroad Commission a law which would forbid refineries from producing gasoline in excess of demand. While most of the witnesses inferred they had no objection to this program, they did not actively support it.

Roeser pointed out, however, that if Texas had such a law, it might do much to control the national trend, since 40 percent of the crude is produced here and approximately 30 percent of the nation's refining capacity is within the boundaries of Texas. He condemned the practice of selling gasoline below cost and said that recent price firming in the gasoline market indicated that this practice might soon be abandoned. He credited Standard Oil Company (Indiana) with leading the way in this program. Roeser explained that, if Texas could aid in controlling refinery operations, then, by example, it might lead refineries in other sections of the country and other oil producing states to join in a program that would result finally in a situation materially improved in this respect.

He pointed out that when refiners were faced with price cuts, they were able to pass these back to producers but that there was no one to whom the producer could pass them on.

In answer to questions, Roeser told Commissioner Jerry Sadler that the purchasers could not absorb 1,500,000 barrels daily, which would be produced in Texas if the shutdown were lifted for one day of each week. As evidence in support of his argument, Roeser reminded the commission of pipe line proration in K-M-A and other fields.

As these witnesses testified, Commissioner Sadler frequently inquired whether they had heard of independent refiners producing more oil than they could market. He was told that, in most instances, these refiners must depend on spot markets to dispose of their products and that for this reason they rarely manufactured more gasoline than they could sell. Thus, it was apparent that the large quantities of gasoline in storage in excess of needs must have been produced in the larger plants scattered over the country.

Jake Hamon, representing the stripper well industry, said that this branch needed sound regulation to assure stability. This group has 3,000,000,000 of the 17,000,000,000 United States oil reserve, he asserted. For that reason an order operating for three months was advisable, but an order for two months was essential, he thought. By that time the weather would have moderated and the summer demand would have begun. Because every operator has attempted to produce to a limit of his market, the industry is in a dangerous condition, Hamon asserted.

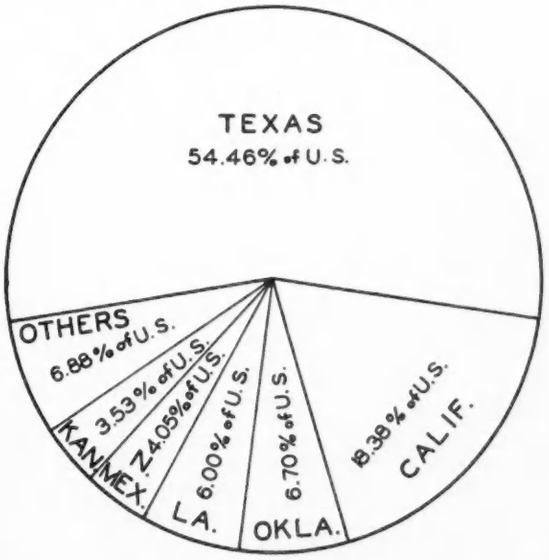
George A. Hill, Jr., president of

Crude Reserves and Current Production

These charts show the proportions of present United States crude reserves held by the various states and the proportions of the current national crude production occurring in the different states.

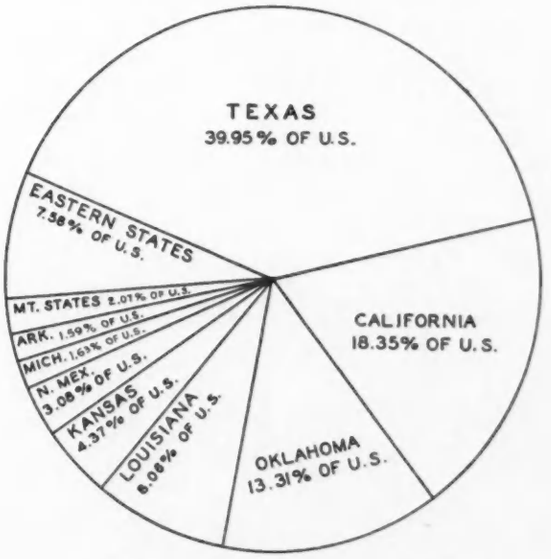
The charts are from exhibits distributed by the Texas Railroad Commission at its March 15 hearing at Austin.

UNITED STATES PETROLEUM RESERVES



Total: 17,348,146 Barrels, As of January 1, 1939

UNITED STATES DAILY AVERAGE CRUDE PRODUCTION



Total: 3,315,250 Barrels Daily As of Week Ended March 4, 1939

Crude Oil and Gasoline Inventory Situation

Figures presented by refiners at Texas Railroad Commission hearing March 15, 1939

(barrels)

COMPANY	GASOLINE STOCKS (Finished and Unfinished) At Present	Change from Year Ago	Change Since Dec. 1, 1938	CRUDE OIL STOCKS At Present	Change Since 1938	Expected Withdrawals from Stocks between Now and May 1, 1939	Gasoline Stocks, March 31, 1938	Crude Stocks, March 31, 1938	Expected Gasoline Stocks, March 31, 1939	Expected Crude Stocks, March 31, 1939	Policy on Inventories from Now Until May 1, 1939
Skelly Oil Co.	758,755	5,000—	242,000—	606,579	16,000+	[3]	730,520	739,181	750,000	620,000	Expect to draw moderately.
Cosden Pet. Corp.	45,072	36,258—	19,592—	36,481	24,512—	[4]	83,294	43,910	30,000	20,000	Crude and gasoline to be exhausted on June 1, 1939.
Magnolia Pet. Co., 2-28-39	852,000	1,331,000—	162,000+	20,600,000	1,600,000— (12-31-38)	1,400,000— C 211,000— G	2,424,000	25,500,000	735,000	19,800,000	Decreases of both gasoline and crude expected.
Continental Oil Co.	1,963,800	262,496+	389,938+	8,665,085	433,387—	None	1,701,304	9,098,472	1,934,695	8,714,000	No material change expected.
Gulf (Out of Comptroller's Office)	5,140,819 (2-25-39)	5,937,897+	322,824+ (12-3-38)	14,[illegible]5),000 (2-24-39)	383,900—	Not given	6,095,174	16,862,000	5,522,819	Not given	Stocks will show no increase.
[1]Standard Oil of Indiana	5,884,939	777,761—	942,472+	36,586,474	752,965— (11-1-38)	Ap. 800,000—	6,298,096	44,461,685	5,841,000	36,190,000	(a) Gradually increase purchases of Mid-Continent crude to maintain present stocks; (b) moderate reduction of gasoline inventory.
Socony Vacuum, including all operations in United States	6,356,000	1,986,000—	903,000+	25,500,000	1,859,000—	Crude—Yes Gasoline—No	8,777,000	31,581,000	7,031,000	24,376,000	Crude, decrease 1,765,000 barrels; gasoline, increase 701,000 barrels.
Humble Oil & Refining Co.	1,994,254 (Est.)	1,076,333—	164,085—	12,030,401	729,247—	190,947— (Est.)	2,277,541	13,165,819	1,907,279	12,054,674	Gasoline, decrease 200,000 barrels; crude, decrease 190,947 barrels; residual fuel oils, decrease 150,000 barrels.
Maritime Oil Co.	96,000	No stocks	36,000+	55,000	None	No	None	None	131,000	55,000	.....
Shell Pet. Corp., includes Shell Union east of California	5,265,000	631,000—	526,000+	6,586,000	848,000+	100,000+	6,052,000	10,000,000	5,634,000	6,800,000	Crude, increase 100,000 barrels; gasoline, increase 400,000 to 450,000 barrels.
[5]Petroleum Operating Subsidiaries of Cities Service Co.	1,753,058 (1-31-39)	646,925—	155,341—	7,712,049 (2-28-38)	361,706—	Yes	2,609,203	12,101,054	1,850,000	7,500,000	Decrease of both crude and gasoline.
Barnsdall Refining Corp.	236,146	3,342+	36,303+	177,435	10,816—	None	244,224	None	142,894	177,435	Gasoline, May 1, 166,973 barrels; crude, decrease 177,435 barrels according to budget.
Barnsdall Oil Co.	.....	.....	.....	[2]438,500	116,175+	100,000—	.....	1,036,962	.....	Ap. 325,000	Between 200,000 and 300,000 barrels less.
Taylor Refining Co.	278,342	257,000+	7,184+	252,862	100,000+	Probably decrease	17,989	31,981	250,000	200,000	Will try to reduce.
Coastal Refining, Inc.	74,342	15,000+	6,000—	54,845	25,000+	Probably reduce	40,507	5,000	70,000	40,000	Will try to reduce.
Ohio Oil Co.	534,444	37,787+	131,558+	10,464,465	522,062—	No	538,687	10,808,520	542,133	10,464,465	Reduce gasoline stocks at least 50,000 barrels.
Pan American Pet. and Transport Co. and subsidiaries except pipe line companies	2,150,000 (3-10-39)	660,000+	600,000+	2,940,000 (3-10-39)	93,000—	Depends on Allowable	2,104,000	3,065,000	2,800,000	2,970,000	On basis of 5 day week to withdraw 3,000 barrels daily; on basis of 6 day week to add 2,000 barrels daily; all three units of concern scheduled for shutdowns during the month.
Danciger Oil & Refineries	105,000 (3-11-39)	28,000—	30,000+	45,000 (3-11-38)	25,000—	No Change	133,000	8,521	110,000	45,000	To build gasoline stocks up to 150,000 barrels.
Republic Oil Refining	659,791	298,955+	134,500+	1,037,091	279,842+	To withdraw	452,620	948,735	650,000	995,000	Reduce both gasoline and crude.
Stone Oil Co.	289,518	247,512+	274,289+	89	93,304—	No crude stocks	37,560	53,220	220,000	None	Conserve and liquidate.
Eastern States Pet. Co., Inc.	316,903	89,586+	157,976	164,800	167,467—	Yes	108,045	148,197	100,000	50,000	Decreasing all inventories.
Texas Co.	8,133,071	714,134—	1,965,446+	25,984,242	1,364,020+	.....	9,221,588	24,546,244	8,110,862	26,716,503	With shutdowns: Gasoline, decrease 78,109; crude increase 99,721. Without shutdowns: increase 2,159,435.
Sun Oil Co.	2,987,000	48,000+	508,000+	5,992,000	295,000+	Expected Inv. 3,156,000	3,168,000	5,952,000	3,043,000	6,027,000	.....
Atlantic—All companies	1,697,953	281,476—	42,572+	4,764,165	2,295,765—	5,096,000 No	2,002,191	7,120,614	1,911,000	4,974,655	.....
[9]Standard Oil Co. (New Jersey)	4,774,600	1,367,100—	[8]359,000—	15,792,700	[8]1,541,400—	827,900	6,492,800	17,452,000	5,544,000	15,123,100	Decrease 827,900 barrels; naphtha up 825,000.
Shamrock Oil and Gas	120,801	44,711+	51,572+	21,923	3,409—	Yes	63,287	53,272	83,370	23,600	Expects gasoline stocks to remain same.
Pure Oil Co.	2,159,162	455,811—	528,013+	3,671,400	35,879—	70,000 to 100,000	2,401,099	4,033,934	2,291,000	3,600,000	Gasoline stocks up 90,000 barrels from March 1; crude stocks 70,000 to 100,000 lower.
Mid-Continent Petroleum Corp	708,967	76,933—	44,012+	2,808,426	33,321+	Gas only	92,720	2,979,461	761,905	No change	Cut gasoline stocks; hold crude in balance.
Tidewater Associated Oil Co.	[6]1,478,000	[6]23,000—	[6]366,000+	[7]4,587,000	17,000+	None	[6]1,521,000	5,028,000	[6]1,521,000	4,808,000	Will not exceed present levels.

[1] Excluding Pan-American and its subsidiaries. [2] Barnsdall Pipe Line Co. [3] Withdrawal. [4] Do not have sufficient stock on hand to operate plant. [5] Cities Service Oil Co. of Delaware; Cities Service Oil Co. of Pennsylvania; Arkansas Fuel Oil Co.; I. T. I. O. [6] Eastern. [7] Tex.-Okla.-La.-N. M. [8] Based on comparison of stocks December 1, 1938, and 1939. [9] Report from Standard of New Jersey includes data on Standard of New Jersey, Standard of Louisiana, Standard of Pennsylvania, Colonial Beacon, Carter Oil, Tuscarora Pipe Line, Oklahoma Pipe Line, Ajax Pipe Line, but not Humble Oil.

Houston Oil Company of Texas and vice president of the American Petroleum Institute, likewise indorsed a continuation of the orders for 60 or 90 days. If this is done, he thought the Texas Railroad Commission would have made "the most important contribution to recovery that can be made in America today, not only in the act itself, but by the example of leadership which will be set."

The order now in effect for a period of three months he characterized as the "most enlightened and statesmanlike procedure ever adopted by any regulatory body."

While Hill did not say, in answer to questions from Commissioner Thompson, that he thought refinery control was essential to the commission program, he did express the opinion that some regulation could lead the way and influence other states as well as Texas.

Fred Van Covern, chief statistician for the American Petroleum Institute, reported that production for the first quarter was about 3,195,000 barrels daily, which is approximately 95,000 barrels above the demand as estimated at the December proration hearing held in Austin. This was due in part to poor market conditions, but he thought they were normal and in line with the trend of other industries as indicated by the Federal Reserve index for the same period. While he did not expect that the demand would increase much during the next 60 or 90 days, he thought that it would follow this Federal Reserve index trend, which is now rising.

Gasoline stocks on March 1 will be about 86,000,000 barrels, he estimated, as compared with 69,000,000 barrels on October 1, 1938. These stocks will be about 4,000,000 too much, Van Covern believes, and between now and September 1, they must be reduced by 27,000,000 barrels if the industry is to be in a good position when winter begins.

Dr. Joseph E. Pogue said that production must be controlled at about the present rate for the next 90 days. He thought that new wells drilled would supply any increase in the demand which might occur. Pogue recommended that 126,000 barrels daily be withdrawn from stocks of all oils during 1939.

Consumer demand for 1938 averaged 3,324,000 barrels daily, Pogue said, and he expects the demand for this year to average 3,440,000 barrels. During April, May, and June there will be approximately 3,400,000 barrels daily. It was during the course of this statement that Pogue made the assertion that Texas can never return to proration on a 7-day basis until the marginal well law has been amended.

The vastly increased producing capacity of the industry was blamed by Pogue for the price cut last year, which occurred while production was controlled. In other statements, Pogue has pointed out that storage above ground and storage under ground are one and the same, insofar as the underground storage can be produced from flowing wells.

Sachs Sees Slight Increase

Alexander Sachs, economist, expressed his views on the national economic situation as it affects the oil business. He emphasized the fact that prosperity in the oil industry follows the trend of other commodities but that there is a lag between oil and other commodities. For that reason he thought that the oil depression came later than the depression in other industries, and that its position now is better than that of some other commodities.

During 1939, the demand for oil, Sachs said, will be greater but not exceptionally vigorous. The price cut which came last fall he predicted at a meeting in Colorado Springs last summer when he said he thought the industry was over capitalized, and was drilling far too many wells.

For the next six months, the industry must bear the emergency devices (such as the Saturday and Sunday shutdown). He based his conclusion on the prediction that there will be no great prosperity but merely "sustained normalcy" during the remainder of this year.

Senator Joe Hill, of Henderson, sounding a warning to representatives of other oil producing states who attended the hearing, asserted that if they did not join in the curtailment program, producers here ultimately would be forced to open their wells. He pointed out that East Texas alone could produce enough oil to break the entire market.

Representatives of the various fields filed requests for increases in allowables. It was during the course of these reports that the operators pointed out that they had no desire to see an increase in the daily allowable for Texas, but said that they wanted a share in any increases which might arise from adjustments of allowables.

Gulf Coast operators listed several fields which they said could produce at the current rate from 50 to 288 years without exhausting the energy. In other words, they could flow oil continuously at the current rate for that length of time, and in some instances 50 years would be needed to get the recoverable oil.

Charles M. Langford, director of production for the commission, reported that East Texas pressures had dropped from 1106.78 pounds on January 9, to 1100.63 pounds on March 8. It was apparent from these figures that despite the two-day shut down, pressure in the great East Texas field was declining steadily and experience has shown that increases in production invariably result in acceleration of the pressure drop.

Nominations filed by purchasers showed that on the basis of 7-day production there is a demand for 1,502,703 barrels daily which is 47,614 barrels less than the January nominations.

Arkansas statewide hearing March 27

The Arkansas Oil and Gas Commission has ordered a statewide hearing for 10 a.m., Monday, March 27, at El Dorado "to determine the optimum daily rate of production of oil and gas" from the following fields: Atlanta, Buckner, Magnolia, Miller (Rodessa), Schuler, and Village. Signing the order was the entire commission, who are: O. C. Bailey, chairman; J. D. Reynolds, Ed Hollyfield, Robert J. Short, L. A. Longino, and Basil Hoag.

Illinois acting governor against any control measures

Acting Governor John Stelle last week urged the Petroleum Association of Illinois to fight "restrictive" legislation directed against the state's booming oil industry, pledging his support of efforts to prevent passage of an oil control law which he declared was being sought by some groups in the industry.

Stelle, who recently refused to commit Illinois to control legislation during a meeting with Oklahoma's Governor Leon Phillips at St. Louis, wrote the association that "proration laws mean an end to development of our oil resources and a stopping of the prosperity which will be."

"I want to congratulate you on the organizing of an association which to me means a protection for the people of Illinois in getting for them an orderly development of our Illinois oil fields," he wrote.

"Pressure is being brought everywhere by those who do not want a development in our Illinois oil fields, so that proration laws will be passed in Illinois, which means and end to development of our oil resources and a stopping of the prosperity which will be in the many towns and cities in Illinois.

"I can not stress too strongly the need of a strong association composed of men and women in various towns in Illinois for the purpose of defeating any legislation tending to proration of Illinois oil.

"Naturally, there will be a lot of pressure and education by the major companies that we need proration in Illinois, but the closeness of the Illinois oil fields to the market will be the means, if we continue the fight in a vigorous manner, of bringing many additional refineries to Illinois cities, additional business to the business men, higher wages to our workmen and general prosperity to the farmers and land owners if we fight in every possible manner any attempt to prorate the Illinois field.

Kansas bill would stop favors in proration

Restriction on the Kansas Corporation Commission in granting special field allowables was part of the bill which was passed March 15 by the Kansas senate and sent to the house of representatives for consideration.

During 1938 a special allowable in fields where producers could show demand for the oil brought producers into sharp alignment for and against the practice.

Kansas not to have formal April hearing

For its April allowable the Kansas Corporation Commission will not hold a formal hearing. Output of fields will be set after getting nominations from crude oil purchasers. T. A. Morgan, recently returned to the post of director of conservation, said he did not know that future allowables would be fixed without the hearing at which producers give evidence.

Oklahoma hearing will be held on March 29

Allowables for Oklahoma oil fields for April will be fixed by the Oklahoma Corporation Commission March 29. Purchasers will make nominations in the morning and the hearing will come in the afternoon.

Southwest A. P. I.

Warnings against federal control featured in talks before Division of Production District session at San Antonio . . . Engineering program practices

Warnings against impending federal control, along with discussions of engineering advancements and operating problems, highlighted the Southwestern District Meeting of the American Petroleum Institute's Division of Production in San Antonio last week.

Federal control possibilities entered the meeting at one of the four scheduled sessions, when executives of the American Petroleum Institute spoke.

Appearing before the meeting were Axtell J. Byles, president, W. R. Boyd, Jr., executive vice president, and George A. Hill, Jr., vice president in charge of production for the institute. Each discussed some phase of the growing danger of the federal government usurping control of petroleum, and declared with vigor that the basis of all beliefs in such a necessity were misinformation and not actual facts.

Byles asserted the industry was the trustee of oil for 130 million people and was charged with giving them the most of this priceless resource at the least cost. He suggested the industry, if it was not to surrender its individual liberty, work toward a three point program of:

(1) Sound conservation laws, equitably administered and brought up-to-date to keep pace with progress;

(2) An interstate oil compact for the collection and dissemination of economic trends; and

(3) Permission for voluntary agreements after their submittance to some government authority for their approval.

Asserting that there are various types of criticism now agitating federal control, Boyd pointed out the untruthfulness of their basis. One of the principal reasons assigned to the need for federal control by outside interests is that of an existing monopoly, he said.

"If the industry were run by a monopoly, prices would be high, whereas both crude and refined prices today are lower than in previous years. For instance," Boyd pointed out, "Gasoline in 1926 was 20 cents per gallon and in October, 1938, was only 13 cents. Furthermore, earnings have averaged but 1.36 percent on capital investment during the last 16 years, and wages are 50 percent higher than a few years ago."

Proration has not destroyed competition, George Hill declared. "Many do not realize that the proration of production among the various producers in a given field, or among the various producing fields within a state, has been preceded by innumerable and unrestricted competitive activities, such as finding of the structure, purchase of the lease, employment of skilled technicians and in the actual drilling of the test."

Hill took strong exceptions to the findings of the natural resources committee that only the federal government can be expected to initiate broad conservation measures for the industry, and urged that everyone ponder carefully the question of the wisdom of conceding to a centralized federal authority.

The majority of the other discussions were technical papers, and included such subjects as distillate operations, completion data, pipe standards, appraisal work, and the education of petroleum engineers.

These papers are abstracted in the paragraphs that follow:

Oil Development and Production Practices in Southwest Texas

By C. H. ROW and
R. H. McLEMORE,
Sun Oil Company.

The geologic section of Southwest Texas is made up of a number of formations of lime, sand, shale and their variations with a regional gentle dip toward the Gulf of Mexico. In general the formations outcropping farthest from the Gulf are composed of harder rocks, while the younger formations near the coast are poorly consolidated and, therefore, much more easily penetrated by the drill. This section includes the Glen Rose formation of Lower Cretaceous age, at its base, and the present day beach deposit at its top, a total thickness of 25,000 to 30,000 feet.

E. P. HUBBARD
Elected Chairman of Southwest District, A.P.I. Division of Production.

In the so-called fault zone of Southwest Texas, there has been a great amount of faulting, the displacements varying from zero to several hundreds of feet. In the coastal belt of the district, the common type of structure is the anticline or elongated dome, sometimes complicated by faulting. Through western Starr County, Zapata, Webb, Duval and McMullen counties a number of fields have resulted from the updip pinching out of sand bodies and associated nosing of the structure or minor faulting or both.

The following table summarizes the approximate cumulative production figures to date from the oil bearing horizons of Southwest Texas:

	Barrels
Miocene	8,000,000
Upper and Middle Oligocene	63,000,000
Frio-Vicksburg	97,000,000
Jackson	125,000,000
Cockfield-Yegua	37,000,000
Mt. Selman	250,000
Navarro-Taylor	17,000,000
Serpentine	20,000,000
Austin Chalk	10,000,000
Buda Lime	125,000
Edwards Lime	151,000,000
TOTAL	528,375,000

These various oil-bearing horizons offer future possibilities outside of fields in which they are now producing, and there are some formations not now producing that are looked upon with favor.

Drilling and production practices in Southwest Texas may be divided into three geographical zones, each of which has problems peculiar to that locality. Operations vary from the heavy-duty rotary rigs used in drilling to producing strata at 9000 feet to 2500-foot wells sunk with small rotaries. Consequently, casing programs vary greatly.

Completion and production practices cover a similar wide range, varying from small to high outputs, from little gas to high gas/oil ratios, and from lime to troublesome sand conditions.

Well Completion Data

By S. F. BOWLBY,
Shell Petroleum Corp.,
Houston, Texas

Recent improvements in drilling and completion technique, as well as the introduction of electrical measuring devices, have placed at the disposal of the oil industry a set of tools that require appreciable correlation and accuracy in order to be of maximum use and profit, more so because of greater depths.

A better understanding of the reservoir and its contents, obtained through early and detailed observations and proper interpretation, has made it possible to take immediate action in determining the best completion procedure. It follows that a standardized method for taking data should be developed in each field, but it is also evident that no stringent rules can be laid down as to the amount and nature of data to be assembled and preserved, as this will vary considerably with the conditions encountered.

Generally speaking, records may be of two kinds, firstly, the written record providing the historical background and including all minor details in the drilling of a well, and secondly, the graphic record of which well logs and cross sections are examples. The latter has undergone considerable change and improvement due to the advanced technique and greater variety of physical constants measured and recorded thereon.

Usability should be the keynote in as-

sembling data and keeping records, although admittedly we sometimes are not aware initially what data may ultimately be more usable.

There are several good reasons why the proper recording of completion data is important:

1. Technical—Graphic records are a tool of the engineer and geologist and should therefore be complete and understandable by all.
2. Scientific—The proper recording of actual facts gives the research engineer a background of fact which will eliminate lost motion in this direction.
3. Legal—The graphic record with the subsurface deductions to be made therefrom is admitted as evidence in conclusion.

Petroleum Engineering Education and Its Relation to the Petroleum Industry

By HAROLD VANCE
Head of Petroleum Engineering Department, Texas A. & M. College

Petroleum engineering is the application of engineering principles to the drilling, production and transportation divisions of the petroleum industry. A number of educational institutions are offering courses which teach the engineering principles and the application of these principles to the above divisions of the industry. The National Council for Professional Development has accredited the petroleum engineering curricula in 11 institutions in the United States.

Four-year courses do not give sufficient time for thorough training in the fundamentals, and to correct this condition, some institutions are offering five- and six-year courses in petroleum engineering.

Future employers will be better able to select graduates by offering employment to students during vacation periods. The future employer should realize that college work is no different than any other type of work, and that the students' class records simply represent a job completed by the student and is a good indication of what may be expected of him in the industry.

Petroleum engineering faculties should have a broad background of practical experience and should keep up with advancements in the industry.

Petroleum engineering laboratories in educational institutions should be better equipped, particularly in view of the amount of taxes paid by the industry. Educational institutions offer an economical means for conducting fundamental production research, and more work of this type should be provided by the oil companies.

W. S. MORRIS

Chairman of the Executive Committee, Southwest District, A.P.I. Division of Production.

New Officers Named by Southwestern District of the American Petroleum Institute, Division of Production.

E. P. Hubbard, Gulf Oil Corporation, Houston, was elected chairman of the Southwestern District of the American Petroleum Institute's Division of Production.

Serving with him as District Vice Chairmen are to be the following:

R. L. Carruthers, Sun Oil Company, Beaumont, for the Gulf Coast;

Harold Decker, Seaboard Oil Company, Corpus Christi, for Southwest Texas;

L. A. Ogden, The Pure Oil Company, Fort Worth, for North and West Texas;

T. W. Johnson, Union Producing Company, Shreveport, for Arkansas and North Louisiana;

C. G. Staley, Lea County Proration Office, Hobbs, for New Mexico;

J. P. Straight, Cities Service Oil Company, Gladewater, for East Texas.

J. U. Teague, Humble Oil & Refining Company, Houston, was selected secretary-treasurer.

W. S. Morris, of the East Texas Engineering Association, Kilgore, was named chairman of the following advisory committee:

E. H. Blum, The Atlantic Refining Company, Dallas; Al Buchanan, Al Buchanan Drilling Company, San Antonio; A. R. Campbell, Mid-Continent Oil & Gas Association, Shreveport; M. G. Cheney, Anzac Oil Corporation, Coleman; Sid Childress, Rio Bravo Oil Company, Houston; J. D. Collett, O'Keefe & Collett Company, Fort Worth; A. J. Cunningham, Standard Oil Company of Texas, Houston; Charles Fitzgerald, Sinclair Prairie Oil Company, Fort Worth; J. S. Ivy, Union Producing Company, Houston; A. R. Wilson, The Texas Company, Houston; T. E. Swigart, Shell Petroleum Corporation, Houston; C. L. Gladden, Magnolia Petroleum Company, Dallas; R. G. Hamaker, Reed Roller Bit Company, Houston; J. L. Hamon, Cox & Hamon, Inc., Dallas; J. S. Hasson, Ohio Oil Company, Shreveport; C. E. Hughes, Arkansas Natural Gas Company, Shreveport; R. B. Jones, Panhandle Refining Company, Wichita Falls; J. W. Jordan, Sinclair Prairie Oil Company, Midland; A. G. Levy, Fohs Oil Company, Houston; E. A. Landreth, Landreth Production Company, Fort Worth; A. N. McCorkle, Stanolind Oil & Gas Company, Houston; R. S. McFarland, Seaboard Oil Company, Dallas; J. R. McWilliams, Standard Oil Company of Louisiana, Shreveport; L. N. Moffitt, Triangle Drilling Company, Shreveport; Gordon Richmond, Hughes Tool Company, Houston; J. A. Ritter, Sun Oil Company, Dallas; C. F. Roeser, Roeser & Pendleton, Inc., Fort Worth; A. H. Rowan, Rowan & Nichols Oil Company, Fort Worth; E. Rubsamen, Trinity Drillers, Inc., San Antonio; J. H. Russell, Gulf Oil Corporation, Houston; E. H. Salrin, Tide Water Associated Oil Company, Houston; J. R. Suman, Humble Oil & Refining Company, Houston; and Chase E. Sutton, The Pure Oil Company, Houston.

Trends and Developments in A. P. I. Pipe Standards

By C. A. DUNLOP,
Humble Oil & Refining Co.

A. P. I. pipe specifications are at the present time undergoing considerable change. Some of the changes are both revolutionary and evolutionary, and are of great import to the petroleum industry.

The collapse strength of casing is an important factor to be considered when selecting long casing strings, and a series of collapse curves for pipe having tensile yield strengths ranging between the limits of 25,000 and 80,000 pounds per square inch and in intervals of 5000 pounds per square inch will shortly be published.

A somewhat radical change in the

J. U. TEAGUE

Secretary, Southwest District, A.P.I. Division of Production.

form of threads for casing and tubing and in the taper of threads for casing, 7-inch O.D. and smaller, is now in process as a result of dissatisfaction on the part of many operators with the performance under field conditions of the American Standard (Briggs), ⅜-inch taper threads.

Increased drilling depths have brought about the use of alloy steels having a higher minimum tensile yield strength than A. P. I. Grade D material for the manufacture of oil-well casing. This higher strength material is to be covered by specification in A. P. I. Stds. 5-A, and a complete reclassification of the grades of casing and tubing is now being considered by the Pipe Committee.

Simplification of casing sizes and weights is a matter of great importance to the industry, and changes in the listing of A. P. I. standard casing sizes with a view to effecting a saving in the cost of this item will be made in the near future.

The Gasoline Tax Situation in Texas

By DATUS E. PROPER,
Executive Vice President,
Texas Good Roads Association

The first problem of highway construction was to lift motor traffic out of the mud. In later years it has been discovered that rainfall was not the only one of these elements with which the construction engineers had to contend. Wind, drouth, erosion, all offer their share of construction worries, too. And with the increase in speed capacity of modern motor vehicles, another problem has arisen to plague the highway engineer—that of safety.

Constant revision in patterns for highway construction is necessary if a high standard of safe and efficient motor transportation is to be maintained.

In view of the above need, it is difficult to account for the present trend in highway taxation—the alarming growth of diversion of the revenue from these special taxes to other than road purposes.

Twenty-five percent of the state gasoline tax in Texas is diverted already to the school fund, another 25 percent to the retirement of county road bonds. During the last five years the staggering sum of $45,127,140.06 has been diverted in Texas, which would have constructed a 600-mile four-lane divided highway.

The time is ripe for a constitutional amendment against diversion, and the Texas Good Roads Association has prepared for submission a constitutional amendment that would accomplish this. It is hoped the present legislature will agree to submit this proposal to the general vote of the people in 1940.

R. L. CARRUTHERS

Gulf Coast Vice Chairman, A.P.I. Division of Production.

L. A. OGDEN

North and West Texas Vice Chairman, A.P.I. Division of Production.

Condensate Wells—Completion and Recycling Operations

By E. V. FORAN and P. C. DIXON,
Parker, Foran, Knode & Boatright

Currently there is considerable interest in distillate recycling operations. A recent order by the Texas Railroad Commission has done much to stimulate this activity, shutting in those wells which heretofore have been wantonly blowing gas into the air.

Distillate in the reservoir, at the time of discovery, exists entirely as a stable gas, and becomes unstable only under declining pressures, in which case, it is observed that a portion of the reservoir gas products condense as liquid, either in place or in transit toward the well, and as liquids become unrecoverable. This fact requires that operations dealing with this type of reservoir be foreign to that of ordinary gas-pool operations.

By maintaining initial reservoir pressure, all the products can be produced without condensation taking place within the reservoir, thereby permitting recoveries possibly as high as 90 percent of the total reservoir content, with one-tenth the number of wells so required for drainage under conventional oil field operations.

Recovery of Condensate from Distillate Wells

By EMBY KAYE,
Tide Water-Seaboard Oil Companies

The recycling operation is considered mandatory in distillate producing fields, not only to prevent the waste of gas but it is the only means known as yet by which substantially all the condensables in the reservoir can be recovered. Consequently, the recycling of gas in distillate pools has become an affiliated petroleum producing enterprise.

Already methods have been developed to recover the condensate more efficiently than in the past, and extraction efficiency of the order of that obtained in natural gasoline plants may be anticipated.

Recent technological advances, together with plants in operation or under construction, point the way to further improvement to the end that waste will be reduced or eliminated in a phase of the industry which is already producing more condensate than is manufactured in all the natural gasoline plants of the country.

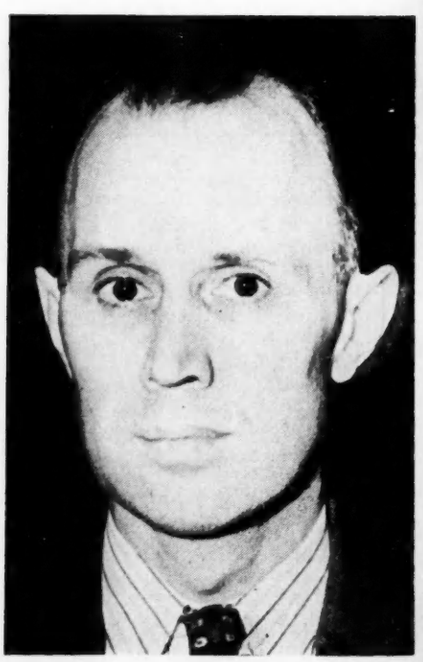
Test procedure and equipment have been developed to stimulate plant conditions on the basis of which reasonably close predictions of plant performance can be made.

Except for one plant operating at least partly in combination with the absorption process, recycling plants in general operate on the principle of pressure drop into the retrograde condensation range and cooling with or without dehydration to affect normal condensation.

Laboratory Technique and Equipment For Study of Condensate

By W. F. FULTON, Chief Chemist,
Union Producing Company

Probably the most important single factor in work of this type is making sure the samples of gas and liquid are truly representative of a well under the desired conditions. To this end the well is allowed to produce at the desired rate for a stabilization period of at least 24 hours



T. W. JOHNSON

Arkansas-North Louisiana Vice Chairman, A.P.I. Division of Production.

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before sampling. The sampling period itself may extend over the following 24 hours; during this period the gas flow is metered and the liquid production determined, preferably in the separator. The liquid samples are taken under separator pressure from the separator into steel cylinders by downward displacement of mercury. Gas samples are taken at separator pressure from taps located at the blow-off on the down-stream side of the separator. The containers are fabricated by welding from standard 10-inch pipe. They are provided with two valves, through one of which gas is allowed to enter until the container is at separator pressure. This valve is then closed and the contents of the container are vented to the atmosphere through the second valve. This process is repeated four times, after which the maximum contamination of the sample by air or remnants of a previous sample initially present in the container can be shown to be one part in six hundred thousand. Five containers of gas are taken.

An apparatus was described for the visual as well as analytical study of gas-condensate phase relationship at reservoir conditions. The experimental procedure was described in detail, and an outline given of the calculations necessary for re-combination in the apparatus of gas and condensate in the experimentally determined ratio.

Appraisal of Oil Properties

By T. A. HALL, Engineer,
First National Bank in Dallas

Changed development and production methods and regulatory control of production in the last few years have brought many new factors into appraisal estimates and made necessary the reweighting of the old factors. Of particular importance is the relative weighting of all factors for properties in prorated areas, where past performance may have no direct bearing upon future expectancy.

Appraisal of oil properties is not an exact science. Relative weights given factors rest largely with the individual opinion of the appraiser. Of importance is to give all factors careful consideration to avoid overlooking one which is of value. A factor having very small weight in an appraisal on property may be the controlling factor in another.

The fundamental major factors in a complete appraisal are: (1) gross revenue or earnings which is determined by (a) recoverable oil, reduced to marketing conditions, and (b) unit or market price of oil; (2) cost of oil produced and marketed, consisting of (a) investment cost of leaseholds, developments and facilities (b) lifting or direct operating cost (c) taxes and assessments levied on production, operation and reserves (d) interest, overhead, general and any other miscellaneous expense in producing the gross revenue; (3) net earnings, discounted for deferment. The discounted net earnings total is the present worth of the properties; and (4) use made of the present worth.

The form of appraisal will vary with the nature of the interest appraised. A form should be set up by leases or groups of leases having combinable factors. This is filled in from the various work sheets compiled in the determination of items.

Michigan conservation law passed by lower legislature

A bill proposing an oil conservation act for Michigan was passed by the lower house of the state legislature last Wednesday by a vote of 79 to 8, and sent it to the senate.

The bill was given 34 amendments in committee before being reported out. Only two major changes were made, however. One section was amended to make "market demand" the base of proration rather than "reasonable market demand." This change was urged by the Michigan Refiners Association as a clause to assure free movement of crude to Michigan plants.

Another change placed a floor under proration. It provides that wells 1000 feet deep or less may not be prorated lower than 100 barrels per week, and that wells of greater depth shall be permitted to produce not less than 100 barrels per week plus 10 barrels additional for each additional 100 feet.

The bill as amended has the support of the Oil and Gas Association of Michigan and Michigan Refiners Association.

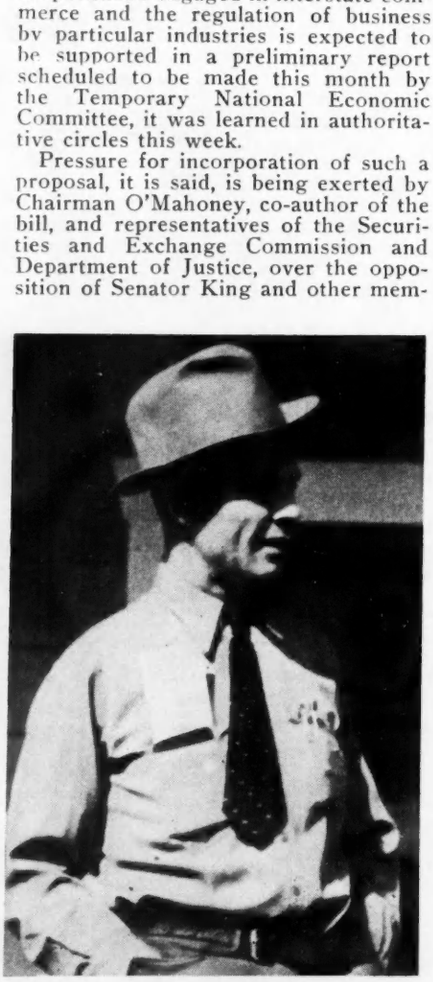
Propose federal licensing of interstate corporations

Enactment by Congress of legislation providing for federal licensing of corporations engaged in interstate commerce and the regulation of business by particular industries is expected to be supported in a preliminary report scheduled to be made this month by the Temporary National Economic Committee, it was learned in authoritative circles this week.

Pressure for incorporation of such a proposal, it is said, is being exerted by Chairman O'Mahoney, co-author of the bill, and representatives of the Securities and Exchange Commission and Department of Justice, over the opposition of Senator King and other members, including the representative of the Federal Trade Commission, who favor more intensive enforcement of the existing anti-trust laws, strengthened by amendments.

Chairman O'Mahoney and Vice-Chairman Sumners last week conferred with President Roosevelt at the White House on the future financing of the monopoly committee investigation, later announcing that it was hoped the committee could complete its study by the end of the current year, although some of the federal agencies were making plans for inquiries throughout 1940. The committee has until the end of 1940 to complete its work.

In the near future, it was said, Congress will be asked to authorize an appropriation of $2,000,000 for the investigation, only $600,000 of which, however, will be asked for immediate use. If the committee finds it cannot file its final report by the end of next January, it will then ask for the remaining $1,400,000.



J. P. STRAIGHT
East Texas Vice Chairman, A.P.I. Division of Production.

Bolivian court refuses review of expropriaton

The United States State Department last week had another expropriation problem on its hands, as a result of a decision of the Bolivian supreme court rejecting demands of the Standard Oil Company (New Jersey) against the government for compensation for seizure of properties said to be valued at about $17,000,000.

No action, however, will be taken until details of the decision are received in Washington and studied with a view to determining what the United States can do about the situation, if anything.

Meager reports reaching the department stated merely that the court had unanimously declared that the demands initiated by Standard Oil Company were irregular and inadmissable on account of lack of juridical competence on the part of its representatives.

There is some grounds for belief, however, that it may be found that the decision is so broad as to leave the way open for negotiation of a settlement between the government and the company, it being thought that possibly the fundamental questions were left open, providing for arbitration on an amicable basis.

W. S. Farish, president of Standard Oil Company of New Jersey, in a statement branded the decision as the culminating act in a long series by which the Bolivian government undertook to confiscate the company's property. He further stated that since the formation of a government petroleum company in December, 1936, civil authorities had sought to weaken the company's position by prejudicial means, and that the consequences of the decision, if it be allowed to stand, would lead to economic and political deterioration of Pan-American relations.

NORMAN H. LITTELL of Seattle, who in 1934-35 was legal representative of the administrator of the oil code in the Northwestern States, has been nominated by President Roosevelt as Assistant Attorney General, to succeed Carl McFarland, who resigned to practice law in Washington with the firm formed by former Attorney General Homer Cummings and William Stanley. He will be in charge of the affairs of the lands division of the Department of Justice.

MORE MUD
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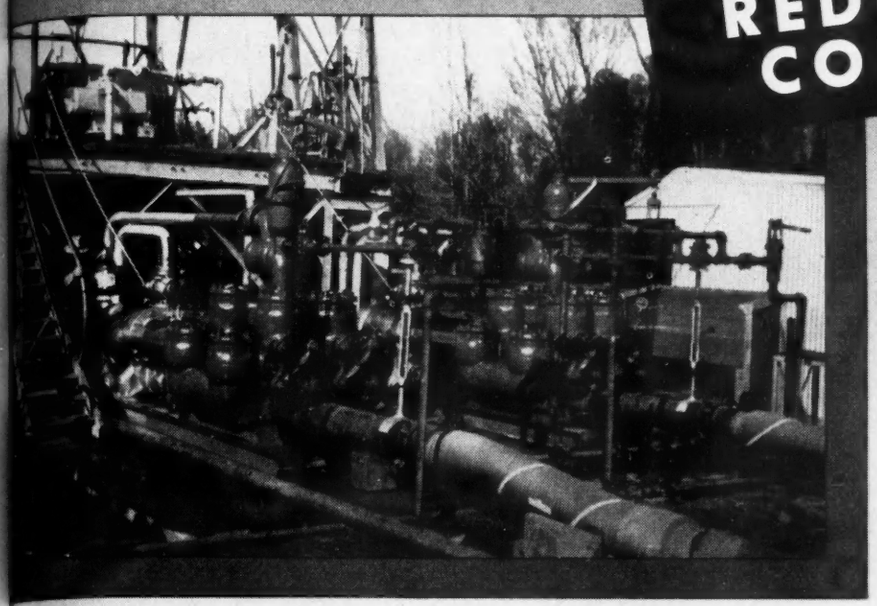
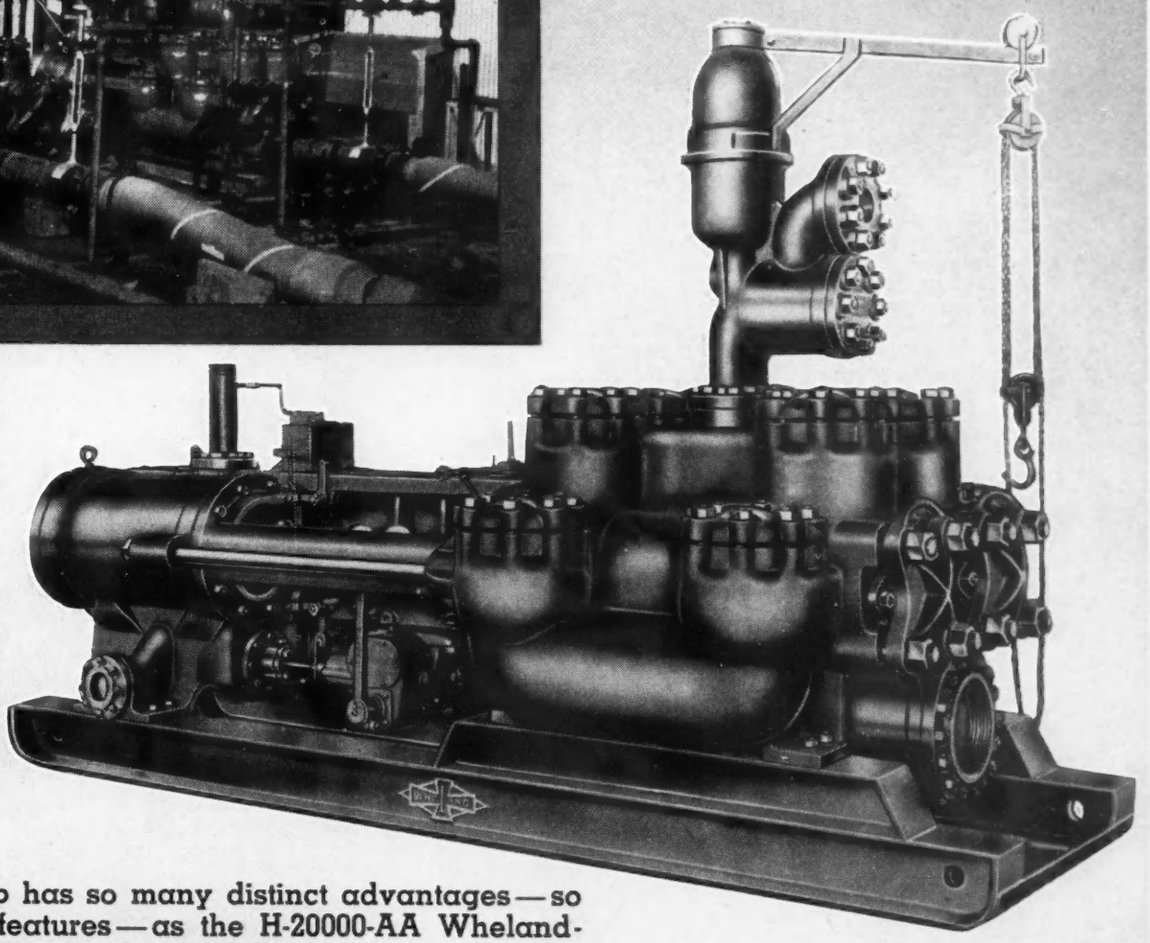
HIGHER PRESSURE
REDUCED STEAM CONSUMPTION



H-20000-AA Wheland - Lucey Steam Slush Pump on Vendome Petroleum Corporation well in Louisiana.

Size: 15½" x 8" x 20"
Maximum Steam Economy.



Rocker Shafts Mounted on Ball Bearings.—Rocker Shafts and Valve Link Fully Inclosed and Operate in oil.—Improved Construction of Fluid Cylinder Head and Liner Retainer.

No steam slush pump has so many distinct advantages—so many revolutionary features—as the H-20000-AA Wheland-Lucey Steam Slush Pump. Combined Steam and Exhaust Valves are located below the Steam Cylinders. The Exhaust Steam must blow out the condensate before leaving the cylinder, resulting in automatic self draining of steam end, improved cushion, improved thermal efficiency, increased mean effective steam pressure, and elimination of broken rings and cylinder heads.

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Market Situation

Brisk demand and continued control brighten general outlook . . . Crude and refined prices are more stable . . . Inventories are satisfactory

Prices of both crude and gasoline better

Some significant price changes have occurred within the past 10 days in the oil industry, featured by increases in quotations for gasoline at Mid-Continent refineries, but including also some upward revisions of crude postings.

An increase of 4 cents a barrel for crude oil in the Burkburnett field and in the Red River bed, Oklahoma, was posted March 13 by Bell Oil & Gas Company. The new posting starts with 75 cents a barrel for oil of 29-gravity and below, with a 2-cent differential up to $1.01 for oil of 41-gravity and above. The concern buys around 2000 barrels daily, about 90 percent of which is in Texas. The new Bell Oil & Gas prices are 2 cents below Standard of Indiana's north Texas postings and 11 cents below that company's Oklahoma prices.

Atlas Oil Corporation March 13 advanced its posted price for crude in the Shreveport field, north Louisiana, 3 cents a barrel, to a top price of 98 cents. The company raised its price for distillate there to $1.08 a barrel. On March 11 an increase of 5 cents a barrel had been posted by Caddo Crude Oil Purchasing Company (M. J. Grogan), another buyer in the field.

Within the past week minimum tank car prices for gasoline at Oklahoma-Kansas refineries have been advanced ⅛ cent a gallon on all grades, and a similar increase has been made on high octane gasoline in the Chicago marketing territory.

In East Texas, too, the gasoline market has appreciably stiffened, and prices are up ⅛ to ⅜ cents from a week ago.

Gasoline Prices

U. S. motor gasoline ranged in the Oklahoma market last week about as follows: 62 octane and below, 3¾ to 4¼ cents a gallon; 63 to 66 octane, 4 to 4¼ cents; 67 to 69 octane, 4¼ to 4⅝ cents; 70 to 72 octane, 4½ to 5 cents.

Corresponding prices in the Chicago market were 3⅜ to 4 cents, 3¾ to 4 cents, 3⅞ to 4¼ cents and 4⅛ to 4¾ cents.

In East Texas, 60-62, 400 end point gasoline was priced generally at 4⅛ to 4⅜ cents a gallon.

Natural gasoline, grade 26-70, was priced generally in the Mid-Continent markets, f.o.b. refineries at 2½ to 2⅝ cents a gallon, and sales were reported at 2⅜ cents f.o.b. Breckenridge, Texas.

Kerosene prices f.o.b. Oklahoma refineries ranged from 3⅞ to 4¼ cents a gallon for the 41-43 water white grade, and from 4 to 4⅝ cents for the 42-44 water white grade; and corresponding prices in the Chicago market were 3½ to 4⅛ cents and 3⅝ to 4⅜ cents.

Fuel oil prices were mostly unchanged last week. In the Chicago market range oil was priced from 3⅜ to 4 cents a gallon. The No. 1 white oil was priced from 3⅜ to 3⅞ cents, and No. 1 straw from 3⅜ to 3⅝ cents. No. 2 straw was 3¼ to 3½ cents. No. 3 oil was 3 to 3⅜ cents. No. 5 oils were 57½ to 65 cents a barrel. The No. 6 oil was quoted at 35 to 45 cents.

Brisk demand and good control aid markets

The oil industry's markets have appreciably stiffened, from well to service station, as demand for gasoline, lubricants, and other products has been unexpectedly good, while the outlook for the industry has been brightened by the prospects for satisfactory regulation of crude production and refinery runs in coming weeks.

Encouragement has been given, moreover, by the statistics of the industry for the past two weeks, which have indicated that output of wells and refineries was being fairly well absorbed by the improving markets.

The meetings of the Texas Railroad Commission and the Interstate Oil Compact Commission at Austin last week were generally regarded as highly constructive, as they tended to promote harmony and cooperation in the industry.

Although the Texas commission did not immediately afterward issue an order on Texas production for April, it was predicted in many quarters that both Saturday and Sunday shutdowns would be continued, although there had been some agitation aimed at lifting the closings for at least one day a week. That the shutdowns would be retained was indicated by the preponderance of sentiment at the hearing in favor of holding the state's output in April at about the same level as in March.

Concrete evidence of strengthening of the markets was furnished last week in the prices of both crude and refined oils. Local increases of crude prices were made in North Louisiana and on the North Texas-Oklahoma border. And minimum gasoline tank car prices were advanced ⅛-cent a gallon by nearly all refiners in the Oklahoma-Kansas districts. Even more pronounced improvement occurred in East Texas. These advances quickly were reflected in the Chicago marketing territory, where prices were raised similarly in some instances.

A threatened reduction of Oklahoma-Kansas crude prices by an independent refiner has been avoided, as Standard Oil Company of Indiana has agreed to relieve National Refining Company of purchases of about 1750 barrels daily of Nowata County, Oklahoma, crude at the market price plus gathering charge. The agreement will provide relief to stripper well owners involved as well as National. The latter had made plans to begin basing its crude prices on the refinery price of 70-72 octane gasoline, which would have represented a 21-cent crude price cut for producers in northern Oklahoma and southern Kansas.

Statistics show further satisfactory operations

The industry is continuing to maintain fair control over its operations in the oil fields and at the refineries, and satisfactory changes of inventories are occurring, as evidenced in the latest weekly statistics of the industry.

Crude oil production increased more than desirable in the week ended March 11, but crude runs to refinery stills were reduced; and although gasoline production was increased, additions to gasoline storage were not very great. Gas and fuel oil stocks were further reduced.

United States crude oil production in the week ended March 11 averaged 3,353,000 barrels daily, or almost 40,000 barrels a day more than in the previous week. The new rate was 13,000 barrels a day above indicated market demand, as estimated by the Bureau of Mines. It was about 1 percent under the corresponding level last year.

Crude runs to refinery stills averaged 3,205,000 barrels daily in the week ended March 11, having been reduced 25,000 barrels from the previous week's rate. The new rate was about in line with indicated desirable operations. It was 3.3 percent higher than the corresponding level last year.

Gasoline production during the week totaled 9,665,000 barrels, or 245,000 barrels more than in the previous week.

Stocks of finished and unfinished gasoline at the end of the week of March 11 totaled 85,966,000 barrels, having increased about 600,000 barrels during the week. Although these stocks already are a little larger than desirable, they are being held down fairly well at present; and they may not increase substantially between now and the end of March, when larger demand should bring a turn of the stocks back downward.

Stocks of gas-oil and fuel oil were further reduced about 1,300,000 barrels in the week ended March 11, having come down to 130,646,000 barrels. They were then 6.4 percent larger than one year previously.

Bureau report shows January crude increase

Increasing for the third successive month, crude oil production in January climbed to a daily average of 3,306,000 barrels, compared with 3,299,600 barrels in December, according to the monthly report of the Bureau of Mines.

The month's production average, while 113,600 barrels under the January, 1938, average of 3,419,600 barrels, was the highest for any month since last August. The increase over December was counter to the bureau's estimate of a decline from 3,305,800 to 3,270,600 barrels, and actual output exceeded the bureau's prediction for the first time since April of last year.

As a result of the increased activity, total production for the month reached

102,490,000 barrels, compared with 102,287,000 barrels in December and 106,007,000 barrels in January, 1938.

Principal changes in state production figures, the bureau reported, were a decline of about 25,000 barrels in California's average and an increase of 15,000 barrels in Illinois. Development work in the latter state, however, slowed down somewhat in January, the rise in production being retarded with oil well completions declining to 259 from 296 in December.

Exports of crude petroleum continued below normal, but crude runs to stills increased materially, with the result that stocks declined in January after increasing appreciably in December, it was stated. Stocks of all oils showed little change, declining only 307,000 barrels to 554,163,000 barrels on January 31.

The yield of gasoline in January was 44.8 percent, compared with 44.4 percent in December and 44.1 percent in January, 1938, it was found.

"The indicated domestic demand for motor fuel in January was 37,847,000 barrels, or 8 percent above the demand in January, 1938," the bureau commented. "Although exports of gasoline fell off sharply from the December peak, the total for the month (3,638,000 barrels) was 18 percent above the corresponding figure for 1938. In spite of the high demand, gasoline stocks increased considerably more than anticipated though less than in January, 1938. Total stocks of finished and unfinished gasoline on January 31, 1939, amounted to 79,466,000 barrels, nearly 8,000,000 barrels more than on hand the first of the year but about 6,500,000 barrels less than on hand a year ago.

"The demand for the various fuel oils continued to run well ahead of the previous year, kerosene being 12 percent above January, 1938, gas oil and distillates up 25 percent, and residual fuel oil up 14 percent."

According to the Bureau of Labor Statistics, the price index for petroleum products in January was 50.4, compared with 50.9 in December and 58.8 in January, 1938. The crude-oil capacity represented by data in the report was 4,103,000 barrels, making the operating ratio 78 percent, compared with 77 percent in December and 78 percent in January of last year.

Standard of Indiana to take Nowata County oil

Standard Oil Company (Indiana) has agreed to purchase 1750 barrels of oil daily from stripper wells of Nowata County, Oklahoma, for a 60-day period. The oil will be taken through facilities of National Refining Company, which last week postponed its previous move to reduce the price of its purchases by linking the price with the average market on 70-72 octane gasoline.

Standard Oil Company (Indiana) will pay the posted price plus gathering charges. The deal was worked out by a committee from the Oklahoma Stripper Well Association. The committee is working on a plan to make the purchasing program permanent between the new purchaser and producers in the Nowata area. The buying will be retroactive to March 1.

West Texas situation aided by completion of new line

Partial relief for the congested pipe line situation in the Wasson, West Texas, field, situated on the Yoakum-Gaines County line, will materialize early this week when the Tyler Pipe Line Company, which is affiliated with Aloco Oil Company, begins running oil to field storage. The former has completed its 20-mile combination 4-, 6- and 8-inch field gravity system that connects all wells acquired by the Aloco Oil Company from The Texas Company, and the oil will be diverted to a 55,000-barrel tank on a station site in PSL Section 381, Block AX, Gaines County.

Tyler Pipe Line Company is stringing 6-inch pipe to connect its Wasson field tank with Atlantic Pipe Line Company's 8-inch trunk line at Hobbs, New Mexico, involving 23.6 miles of line. This unit is due to be completed within 30 days. Atlantic Petroleum Purchasing Corporation has contracted to purchase a maximum of 5000 barrels of oil daily for 5 years from Aloco Oil Company's Yoakum County holdings.

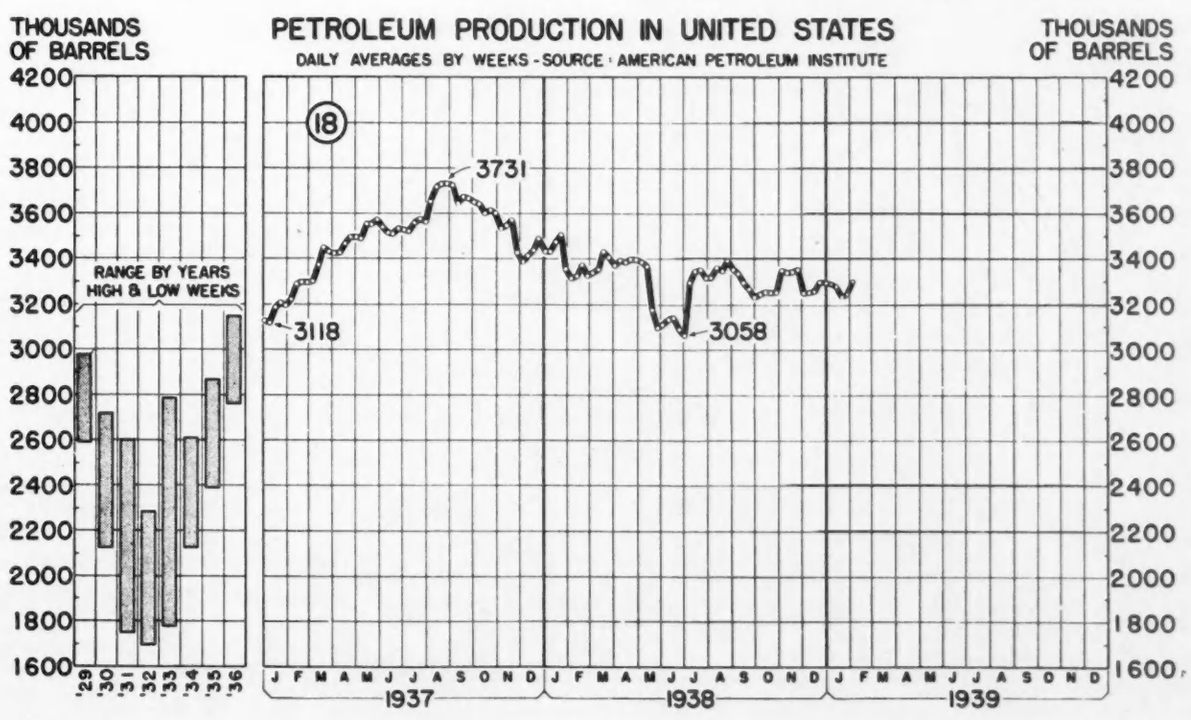
Pipe line proration in the Wasson and

United States crude oil production lately has been running at about the same levels as in the corresponding weeks last year, and under the allowables of March it is due to continue about as in 1938.

The Bureau of Mines has estimated that market requirements for domestic crude in March will average about 3,340,000 barrels daily, and state allowables for the month conform closely with that indicated demand.

For 1939 as a whole, crude oil production probably will be somewhat greater than the output of 1938, as demand is running a little higher.

Consequently, the production of 1939 likely will be the largest in the history of the industry, with the possible exception of that in 1937, despite the comparatively strict proration that prevails.



other North Basin fields that are dependent upon the Humble Pipe Line Company's 6-inch extension line to Hobbs for a market outlet has been increased from 15 to 21 percent of the authorized allowable.

Additional line outlet for Schuler field building

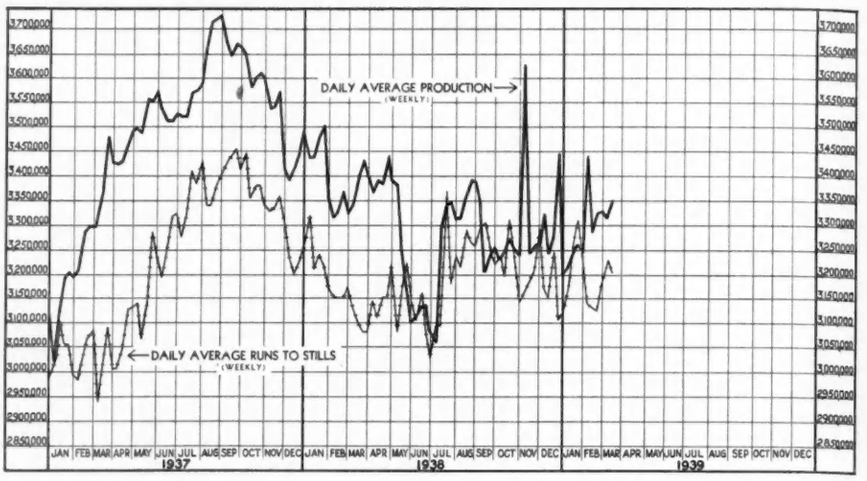
Lion Oil Refining Company which already has two pipe lines from the Schuler field, Union County, to its El Dorado refinery, a distance of 14 miles, is stringing 6-inch pipe for a new system. The company's other two lines from the field to the refinery are 4-inch and 8-inch. The daily average distribution of Schuler oil among the pipe lines serving that field last week follows: Lion, 7270 barrels; Root Petroleum Company, 4365 barrels; Phillips Petroleum Company, 4110 barrels; and Atlas Pipe Line Company, 2780 barrels.

Arkansas Pipe Line Company plans to run a 3-inch line from its pump station in Section 21-17-20, Columbia County, near the Magnolia field, to Tide Water Associated Oil Company's Beene 1 well at Atlanta, Columbia County, agreeing to pay 85 cents per barrel.

Proposes pipe line to span Atlantic

From the floor of Parliament last week War Minister Leslie Hore-Belisha was asked if it would not be possible to lay an oil pipe line from Canada to Britain across the floor of the north Atlantic. Stressing the necessity of oil for military purposes and Canada's potentialities as a producer, house members asked for an investigation and declared they knew of no insurmountable engineering obstacles to such a plan. Trouble experienced by transoceanic cable companies in keeping their lines unbroken was not mentioned.

United States Crude Oil Production and Refinery Runs



Refinery runs of crude were up during January

Refinery activity in January was greater than in either the preceding month or the corresponding month last year, it is disclosed by the monthly report of the Bureau of Mines, runs to stills, averaging 3,213,000 barrels, being 53,000 barrels over the December figure and 55,000 barrels above the January, 1938, level.

Imports of foreign crude decreased to a daily average of 60,000 barrels, 32,000 barrels under the December figure, it was stated.

The bureau reported total receipts at refineries in January of 100,487,000 barrels, of which 98,619,000 barrels was domestic and 1,868,000 barrels foreign oil; with crude runs to stills of 99,614,000 barrels and fuel and losses of 40,000 barrels.

Stocks at refineries again increased, totaling 52,384,000 barrels January 31 compared with 51,551,000 barrels December 31, it was said.

Natural gasoline output and stocks show decline

Production of natural gasoline declined in January to a daily average of 138,000 barrels, compared with 140,000 barrels in both December and January of the preceding year, it was reported March 14 by the Bureau of Mines. Total production for the month was 4,264,000 barrels, compared with 4,345,000 barrels in December and 4,336,000 barrels in January, 1938.

Decreases were general throughout the country, the bureau reported, Seminole, Kettleman Hills and East Texas being the chief exceptions.

Stocks continued to decrease at both refineries and plants and terminals, holdings at refineries dropping from 2,996,000 to 2,833,000 barrels during the month and stocks at plants and terminals dropping from 1,834,000 to 1,734,000 barrels.

Expect southwest Michigan crude price cut to spread

Commonwealth Pipe Line Company, effective March 13, posted a price of 78 cents per barrel for Allegan and Kent County, Michigan, grades of crude, a cut of 10 cents per barrel. The company buys about 3500 barrels daily.

Observers looked for the cut to be followed throughout southwestern Michigan, where production has jumped from 2500 barrels per day a year ago to 16,500 barrels. All southwestern Michigan production is from wells under 2000 feet deep. No proration prevails except by pipe lines in varying degrees.

Oil operators called to Texas pollution conference

As an outgrowth of the statewide anti-pollution conference at Austin last week at the call of Governor W. Lee O'Daniel, the State Health Department and the State Game, Fish and Oyster Commission announced that a meeting

Trends of United States Production and Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports

WEEK ENDED	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	Gas & Fuel Oil Stocks (Barrels)
September 25, 1937	3,666,300	*3,455,000	307,974,000	65,620,000	116,472,000
March 19, 1938	3,322,550	3,080,000	306,380,000	*93,192,000	122,067,000
March 26	3,405,600	3,080,000	307,557,000	92,858,000	122,979,000
April 30	3,396,150	3,215,000	307,147,000	91,339,000	128,270,000
May 28	3,098,650	3,150,000	301,583,000	87,946,000	134,315,000
June 25	3,083,900	3,025,000	293,463,000	82,412,000	137,801,000
July 30	3,316,400	3,240,000	288,514,000	76,864,000	144,294,000
August 27	3,388,500	3,255,000	285,029,000	71,754,000	146,926,000
September 24	3,251,150	3,220,000	280,278,000	68,605,000	150,468,000
October 1	3,231,800	3,235,000	280,852,000	68,602,000	151,759,000
October 29	3,237,500	3,145,000	275,824,000	67,590,000	153,719,000
November 12	3,243,250	3,180,000	273,394,000	67,551,000	*154,666,000
November 26	3,260,900	3,295,000	270,563,000	68,628,000	153,634,000
December 10	3,245,100	3,150,000	†269,509,000	68,587,000	150,779,000
December 31	3,201,450	3,115,000	273,024,000	71,695,000	144,823,000
January 28, 1939	3 248,250	3,235,000	271,763,000	77,279,000	139,349,000
February 25	,328,850	3,185,000	271,758,000	84,597,000	133,671,000
March 4	3,314,850	3,230,000	272,971,000	85,379,000	131,930,000
March 11, 1939	3,353,000	3,205,000	.....	85,966,000	130,646,000
March 12, 1938	3,382,100	3,100,000	304,527,000	93,084,000	122,818,000
Change in past year	—0.9%	+3.3%	—10.3%	—7.6%	+6.4%

* All-time peak. † Lowest for 17 years. ‡ Stocks, March 5, 1938.

of East Texas oil operators would be held in Austin March 25 for the purpose of launching a concerted program designed to remedy existing conditions caused by pollution of streams by oil field wastes and salt water from the world's largest producing field.

At the recent statewide conference, sponsored by the Texas Watersheds Association, a resolution was passsed urging that authority be given the State Health Department and the Game, Fish and Oyster Commission to undertake a comprehensive anti-pollution research program financed by industries most vitally concerned for the reason that their operations often constitute a pollution, hazard, and in some cases a pollution evil.

"We are hopeful that as a result of this discussion a definite plan of disposing of salt water and oil field waste may be arrived at," declared Dr. Geo. W. Cox, state health officer, and Wm. J. Tucker, game department head, in a joint statement. Both executives urged a good attendance at the meeting, to be held in the Land Office Building at 9:30 a.m., March 25.

Wichita.—Field work in Kansas took a jump last week when 29 wells were started and 22 completed. The 10 oil wells had total initial rating of 21,234 barrels. There was 1 gas well, 9 dry holes and 2 abandoned locations. Barton County led in locations with 6 and Russell County had 5. Other locations were as follows: Ellis, 3; Cowley, Graham, Greenwood, Sedgwick and Stafford, 2 each; Butler, Ellsworth, Kingman, Renom and Rice, 1 each.

Crude Production

California and Kansas take lead in increasing United States output by 61,400 barrels daily

Output of the nation's oil fields rose to 3,399,325 barrels daily during the week ended March 18. With California and Kansas in the van, most producing areas registered gains to exceed production for the preceding week by 61,400 barrels per day, and top the Bureau of Mines estimate of demand for domestic crude by 59,325 barrels.

Texas produced an average of 1,317,950 barrels daily, an increase of 2650 barrels over the preceding week but still slightly less than the 1,318,457-barrel state allowable and 45,950 barrels more than the government recommendation.

California production at 644,500 barrels exceeded that for the week prior by 16,300 barrels per day; also surpassing the state allowable by 42,500 barrels and the bureau prognosis by 56,100 barrels.

Oklahoma maintained the pace of the preceding week in producing 446,475 barrels daily to outstrip state allocation by 18,475 barrels and remain 26,725 under the federal estimate.

Kansas lifted 161,175 barrels daily in over-running state and bureau allocations by 18,475 barrels and 26,725 barrels respectively. Production at this level was 22,175 barrels greater than that for the week prior.

In Louisiana, one of the states showing decreases, production fell 4,375 barrels to 265,275 barrels daily, well over state and federal allocations. Arkansas, the other declining state dropped 150 barrels to 53,300 barrels daily which is right at the state allowable and 3300 barrels over bureau estimate.

All other areas gained as seasonal quickening of demand stimulated production.

Arkansas permits

El Dorado, Arkansas.—Three drilling permits were issued last week by the Arkansas Oil and Gas Commission, all in Columbia County, as follows: G. H. Vaughn, D. B. Baker 1, C SE SE 15-17-20; Southwood Oil Company, Incorporated, Levi Garrett 1-B, C SW NE 24-17-20, and L. A. Grelling 2, C SW NE 23-17-20.

United States Crude Oil Production

Estimates Compiled by The OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Recommendation (Daily in Mar.)	State Allowable in Mar.	BARRELS DAILY FOR WEEK ENDED Mar. 18	Mar. 11
TEXAS—				
Texas Panhandle			65,650	61,500
North Texas			80,250	76,800
West Central Texas			30,600	29,950
West Texas			208,250	204,900
East Central Texas			93,500	94,150
East Texas Field			375,250	384,050
South Texas			246,950	250,850
Texas Gulf Coast			217,500	213,500
Total Texas	1,363,900	1,318,457†	1,317,950	1,315,300
CALIFORNIA—				
Long Beach			49,800	50,200
Santa Fe Springs			29,300	28,500
Huntington Beach			30,600	27,600
Dominguez			21,600	21,900
Ventura Avenue			33,200	33,900
Midway-Sunset			63,400	50,400
Kettleman Hills			59,000	57,400
Wilmington			86,100	84,900
Others			271,500	273,400
Total California	588,400	602,000*	644,500	628,200
OKLAHOMA—				
Oklahoma City			117,800	115,900
Seminole Area			95,625	98,250
Fitts			30,150	30,200
Others			202,900	201,925
Total Oklahoma	473,200	428,000	446,475	446,275
LOUISIANA—				
North Louisiana			70,425	73,450
South Louisiana			194,850	196,200
Total Louisiana	259,700	254,200	265,275	269,650

DISTRICT OR STATE	Bureau of Mines Recommendation (Daily in Mar.)	State Allowable in Mar.	BARRELS DAILY FOR WEEK ENDED Mar. 18	Mar. 11
KANSAS—				
Burrton-Haven			8,275	9,050
Russell County			24,275	19,050
Silica			10,450	6,975
Others			117,975	103,950
Total Kansas	150,300	156,850	161,175	139,000
NEW MEXICO	109,700	109,700	109,250	108,500
MICHIGAN	47,700		57,250	54,200
ARKANSAS	50,000	53,090	53,300	53,450
MOUNTAIN STATES—				
Wyoming	53,600		52,950	52,050
Montana	13,500		13,350	13,150
Colorado	4,200		4,100	4,150
Total Mountain States	71,300		70,400	69,350
EASTERN STATES—				
Pennsylvania Grade			71,850	70,500
Southern Illinois (New Pools)			163,000	146,750
Illinois-Indiana (Old Pools)			7,500	7,800
Others, Eastern			31,400	28,950
Total Eastern States	225,800		273,750	254,000
Total United States	3,340,000		3,399,325	3,337,925

† Daily average, considering Saturday and Sunday shut-downs.

* Recommendation of Central Committee of California Oil Producers.

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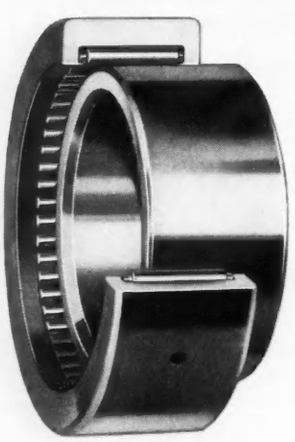

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WEEK'S DRILLING HIGHLIGHTS

East Texas

After seeking since 1925, an oil field is in prospect in northwestern Henderson County. The oil is from the Woodbine, along the Mexia-Talco fault.

California

Production of 9,200 barrels daily of 36.8-gravity oil is recorded for another well at Wasco, Kern County. It has sand from 13,106 to 13,135 feet.

Illinois

Washington County wildcat more than a mile from last month's discovery well for that county has a showing in the Benoist. A deep test to the south of Lake Centralia-Salem pool in Marion County quits after drilling 200 feet into Devonian.

Indiana

The third well in the recently discovered Gibson County pool, just across the Wabash from Illinois, is in for 300 barrels daily but there is trouble with marketing the oil. Also weather conditions are hampering operations.

Oklahoma

High flowing rate through a small choke gives the wildcat discovery a mile north of the Searight pool, Seminole County, a second week of top rating in Oklahoma. The wildcat is producing from the Cromwell sand, where small wells have been completed by plugging back in the Cromwell field. The St. Louis pool, Pottawatomie County, is in line for an eastward extension after having one to the north a week previous. Grant County drew a wildcat west of the Lamont pool.

Kansas

A better showing in wells started and successful extensions of fields in Reno and Stafford counties were outstanding in Kansas last week. The Campbell field, Rice County, was extended by a well which was showing for production a week earlier.

New Mexico

Drilling activity is getting back to normal with 10 projects starting in 6 areas of Lea County. Vacuum production is in process of being extended northeast. At Lovington an extension well is being completed, having found formations higher than at the discovery.

West Texas

Wasson, already the largest field in West Texas, is about to be enlarged by merging with the Bennett field. The interval now is only three miles. The late Garza County discovery is having trouble with water.

North Texas

Three wildcat strikes last week were larger than the three previously reported this year. Further wildcat activity is indicated by staking of three deep tests in Montague County.

Wyoming

Preparations are underway to immediately begin drilling deeper in an old producer in the Ant Hills field to try out the Sundance and Minnelusa formations. Production in these formations at Lance Creek to the southwest lends encouragement to the idea.

Southwest Texas

Development of crude oil production on Bird Island continues to hold interest. Further expansion of several other fields along the lower coast is in prospect, and town-lot drilling is pending at Aransas Pass. Riverside, however, is not having such good luck.

Texas Gulf Coast

A new and deeper sand has been cored in a test at League City, while Satsuma and Fairbanks both were given extensions. The strike on Bolivar Peninsula in Galveston County is further confirmed.

South Louisana

Second and third wells are nearing the objective at Eola where the late Wilcox strike is continuing to hold much interest and influence an extended leasing campaign.

Comparison of Permits Granted for New Wells

STATE	Week Ending Mar. 18	Total this Mo.	Total this Year	Total this Date Last Year	1938 Year Total
Arkansas	3	15	46	52	247
California	24	59	218	284	1,146
Louisiana	34	56	250	282	1,214
Kansas	29	64	261	377	1,453
Michigan	24	69	215	142	953
Oklahoma	27	102	397	449	1,978
Texas	247	708	2,264	3,051	12,369
Total	388	1,073	3,651	4,637	19,360

Summary of Wells Completed in the United States
Week Ending March 18, 1939

	Completions	Oil Wells	Gas Wells	Failures	Initial Production	Total 1939	Total this Date 1938
Alabama	....	....	....	....	.....	1	.....
Arkansas	3	3	....	....	2,184	54	46
California	18	16	1	1	7,661	219	241
Colorado	....	....	....	....	.....	5	3
Florida	....	....	....	....	.....	....	.....
Illinois	68	58	2	8	21,802	835	153
Indiana	2	....	....	2	.....	25	30
Kansas	20	16	1	9	21,234	264	432
Kentucky	5	1	1	3	10	144	155
Louisiana	28	15	3	10	2,580	207	247
Michigan	21	14	2	5	8,380	251	176
Mississippi	....	....	....	....	.....	1	5
Montana	....	....	....	....	.....	23	8
Nebraska	....	....	....	....	.....	....	.....
New Mexico	11	9	....	2	11,686	141	112
New York	10*	10*	....	....	7	105*	173*
Ohio	13	3	7	3	19	182	227
Oklahoma	30	23	1	6	4,166	400	474
Pennsylvania	20*	18*	1	1	36	258*	559*
Texas	160	116	4	40	85,795	2,167	2,826
Utah	....	....	....	....	.....	....	.....
West Virginia	8	1	7	....	2	113	207
Wyoming	1	1	....	....	190	41	17
Total this week	418	298	30	90	165,752	5,436	5,421
Total last week	461	313	24	124	189,137	5,018	5,112
Total this year	5,436	3,735	377	1,324	.....	....	.....

* Includes water-input wells.

Oklahoma Fields

Seminole County wildcat heightens interest in Searight. Oklahoma County wildcat shows possibility of producing.

Tulsa.—Ability of the Seminole County Cromwell sand wildcat to flow 600 barrels daily through 1/32-inch choke over a 3-day period has heightened interest in the area north of the old Searight pool. Last week the well had its first flow through tubing. Since then H. S. Moss has been testing the best flowing method for Leachman 1, C NW SE NE 34-10n-6e, which has not been finally completed. An offset has been staked. Since some of the wells in the Searight pool are producing from the Cromwell sand after plugging back, geological study has turned to the possibility of connecting the new wells with the old pool.

An eastward extension for the St. Louis pool, Pottawatomie County, a week after an extension to the north, forces that area further into the forefront for Oklahoma drilling for the remainder of the year.

As a whole the week in Oklahoma was without big news. The 23 oil wells out of the 30 completions had only 4166 barrels initial output. Since the list carried one Fitts completion of 2180 barrels, the low average of most completions was evident.

A second well for the area north of the Searight pool, Seminole County, was started by Magnolia Petroleum Company, which will drill Harjo 1, NW SW NW 35-10n-6e. It is an east offset to the Cromwell sand discovery of H. S. Moss, Leachman 1, C NW SE NE 34-10n-6e, a mile north of Searight production. The discovery well has not been given official potential rating and the pool has not been named.

During last week the well was tested on various chokes to determine its most effective gas/oil ration. On a choke of 3/32-inch it flowed 908 barrels in 24 hours. Two 24-hour gauges on 1/32-inch choke recorded 656 and 595 barrels. The last check was on 18 hours, still a 1/32-inch choke, when it flowed 598 barrels. Its first recorded output was through 1-inch tubing choke, 1561 barrels in 18 hours.

Only further development will determine whether this is a new field or an extension of Cromwell sand production in the Searight pool. Contrary to earlier reports, there is Cromwell sand production at Searight, where a few wells have been plugged back from either Hunton lime or Wilcox sand. But none of these ever has had initial output to match those of the testing period for the Leachman discovery, which will be allowed 15,000 barrels as its discovery right before going under restriction by proration order.

An extension of the St. Louis pool, Pottowatomie County, was indicated last week when the test of J. E. Trigg, Truesdell 1, SW SW SE 2-7n-5e, east of production, began showing for production from the Viola lime, total depth 4130 feet. It swabbed as high as 7 barrels an hour. The well is east of production.

The fourth producer for the Coyle pool, Payne County, was completed last week by The Texas Company, Minnich 2, C E½ SE NW 11-17n-12, for 355 barrels, total depth 4852 feet in First Wilcox sand. It moves production one location to the southwest, on a 20-acre spacing pattern. Magnolia Petroleum Company is ready to drill plug in Cain 1, C W½ NW SW 12-17n-1e, in the only drilling well in the field. It has pipe set at 4835 feet.

Oklahoma Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Caddo—		
Magnolia, Hedlund 7, sw se nw ne 11-5n-9w (pb 3100 ft)	18	3945
Creek—		
Beal et al, Tiger 1-A, nw nw sw ne 16-14n-10e	36	2708
Central Commercial, Bruce 2 "A", nw sw sw 15-17n-9e	60	2462
Jackson, Watishe 1, nw nwc ne 4-17n-10e	*	3045
Grady—		
Cooke, Bryan 1, se sw ne se 8-3n-5w (pb 2240 ft)	*	2808
Hughes—		
Olson, Peebles 1, sec sw 29-8n-9e	*	3635
Jackson—		
Kerbow et al, Leona 1, sw se se 31-1n-19w	83	2991
Lincoln—		
Cooper, School Land 8, nw ne ne 16-14n-6e	184	3155
Wilcox O&G, Sac & Fox 25, nw se se 16-14n-6e	158	3066
Pontotoc—		
Phillips, Morris 19, se nec sw 25-2n-6e	25	2645
Stanolind, Norris "E" 3, ne sw se 25-2n-6e (pb 4187 ft)	54	4284
Konawa, Masters 2, se sw sw 14-2n-7e	75	1403
Sinclair-Prairie, Moody "B" 5, nw ne nw 22-2n-7e (pb 1364 ft)	5	3913
Simpson-Fell, Bates "B" 1, nec sw 26-2n-7e	2180	3971
Senora, Burk 1, swc se 25-5n-4e	20	2641
Pottawatomie—		
Shaffer, Jones 1, nw sw nw 5-6n-5e	58	4235
Zoeller 1, se ne ne 6-6n-5e (otd 4160 ft)	110	4215
Magnolia, Lynn 4, sw ne ne 21-7n-4e (pb 4016 ft)	33	4137
Deep Rock, Miller 1, se ne ne 32-7n-4e (otd 4210 ft)	119	4275
Magnolia, Youtz 5, se ne nw 20-7n-5e (pb 2883 ft)	5	4291
Alma, Smith 7, swc ne 32-7n-5e	150	4055
Big Chief, Canfield 2, swc 33-7n-5e (otd 4178 ft)	200	4244
Canfield 3, ne sw sw 33-7n-5e	285	4150
Taber et al, Wolf 1, nwc se 33-7n-5e (pb 4100 ft)	*	4314
Wood et al, Peters 1, sw se nw 28-8n-4e	88	4545
Seminole—		
Rogers et al, Martha 1, ne nw ne 1-7n-7e (pb 1613 ft)	*	3237
Amerada, Rice 1, sw se se 5-8n-6e (pb 4092 ft)	170	4311
Stephens—		
Helmerich & Payne, Graham 1, swc ne 12-1n-5w (pb 3875 ft)	¶3	5014
Mudge, Crosby 17, ne ne se sw 23-1s-5w	50	640
Fisher, Stafford 1, sw se ne sw 4-3s-5w	*	1110

*Failures; †Junked; ¶Million cu. ft. gas.

Oklahoma County Wildcat Shows

A showing in the Misener sand was sufficient to warrant coring in the Oklahoma County wildcat of R. Olsen Oil Company, White 1, C NE NE 30-11n-1e. Top of the Misener sand was at 5954 feet, which is 35 feet higher than this formation was found in a dry hole to the north. First saturation was at 5963 feet, where coring began. The well is in the Newalla area, where previous wells have had encouraging showings.

Another test for Grant County went on the drilling list last week, School Land 1, C SE SW 16-25n-4w, six miles west of the small Lamont pool. S. W. Herndon and associates will drill the test, which has support from several major oil companies.

A Lincoln County wildcat was started by Helmerich & Payne, Inc., Johnson 1, SEc 2-15n-1e, two miles south of the Meridian pool Logan County, which has one oil well and two gas wells. This concern, which drilled the two gas wells at Meridian, also will drill an offset to the oil well, Henderson 1, SEc NW 27-16n-1e, a farm out from Gulf Oil Corporation.

The Garfield County wildcat, four miles southeast of the Hillsdale field, began coring first Wilcox sand last week. The test is being drilled by Champlin Refining Company, Allen 1, SEc 26-24n-8w. Top of the sand was at 7030 feet and coring began at 7040 feet.

Drilling was resumed in the Kingfisher County wildcat after tools were washed loose in Lankard 1, NEc SE 34-17n-6w. The test is now below 7085 feet.

A core between 5749 and 5754 feet in the Garvin County wildcat of Pure Oil Company, Derdeyn 1, NE SW SE 19-3n-1e, had sufficient saturation to warrant a drill stem test, which showed 3200 feet of salt water. Drilling was resumed. This company is below 6200 feet in its Carter County wildcat, Noble 1, C NE SE 35-2s-1e, north of Ardmore.

The one drilling well in the deep oolitic lime section between the shallow Fox and Milroy pools is still testing, with Gulf Oil Corporation striving to gain flowing production below 8100 feet in Empire 1, C SE SE 27-2s-3w.

Grady County drew a wildcat test last week when J. M. Henry staked Thomas 1, NE SE NE 9-5n-7w, six miles northeast of the Chickasha gas field. It is slated to go to 3500 feet.

Another 1000 feet of drilling will bring a depth record for Oklahoma in the Washita County wildcat of Continental Oil Company, Proctor 1, C NW 28-10n-20w. It is below 10,400 feet and the depth record is 11,415 feet. The Washita County test resumed drilling two weeks ago after 9-inch casing was set at 10,195 feet.

Indian Territory Illuminating Oil Company failed to get production in the Senora sand, two miles north of the Olympic pool, Okfuskee County, and abandoned Palmer 1, NE SE NW 5-9n-10e, at 1942 feet. Top of the Senora sand, which produces in the Olympic field was at 1828 feet. The wildcat was started after 10-acre spacing was ordered by the Oklahoma Corporation Commission.

Five Tribes lease sale

Muskogee.—Leases on 75 tracts of lands owned by the Five Civilized Tribes will be sold at auction here March 27 by the superintendent of the agency. Washington, Creek, Wagoner, Muskogee, Okmulgee, Okfuskee, Hughes, Seminole, Pittsburg, Coal, Pontotoc, Murray, McClain, Grady, Carter and Marshall counties are included in the listings.

Kansas Field Developments

Fields in western area of state get production extensions. Barton County wild gas well showed oil before closed.

Wichita.—Extensions were sprinkled over the Western Kansas area last week.

The Wherry pool, Reno County, was extended a half mile to the northwest and the Buhler pool, same county, had a showing to indicate movement of production a half mile to the west. The mile south extension for the Leesburgh pool, indicated by a showing two weeks previous, was certain. A Misener sand showing a quarter of a mile from Arbuckle lime production in the Hittle pool, Cowley County, indicated addition of this formation as a source of oil.

Before being killed, after flowing wild for three days, the Barton County gas producer, a half mile northwest of the Beaver pool, flowed small amounts of oil from the Topeka lime. The blowout came from 2900 feet in Topeka lime. Casing is being lowered for further testing. Although the well is close to production, there are dry holes between it and the Beaver pool.

Field work showed a sharp upturn in Kansas last week when 29 wells were started. The number is twice the total of wells started during most of the weeks of 1938. Only 22 wells were completed and 10 of these were oil wells, whose potential rating reached 21,234 barrels.

The extension for the Leesburgh pool, Stafford County, and the completion last week of a second well in the new Peavey pool, Ellis County, established two areas, which are assured of steady development. The Peavey pool drew an offset location last week. The area has been given a pool name but it is likely that it finally will connect with the Burnett South pool, 2½ miles north.

A half mile to the northwest extension for the Wherry pool, Reno County, was assured by potential rating of 1698 barrels in John 1, C EL W½ SE 31-20-7w, drilled by C. L. Carlock. After drilling to 3320½ feet in the conglomerate, top 3317 feet, the well flowed 150 barrels in 40 minutes while running tubing. The oil tested 39-gravity.

Indications that the Buhler pool, Reno County, will get an extension of a half mile to the west came with the showing of Westgate-Greenland Oil Company's Johns 1, SEc SW 25-22-5w, which had 1200 feet of oil in the hole in 12 hours from 3913 feet in the Simpson formation. It will be drilled deeper before being tested.

A Misener sand showing, a quarter of a mile east of Arbuckle lime production in the Hittle pool, Cowley County, placed that formation in line as a source of oil in one of the older pools in the eastern half of the state. Arthur Brewer had 2500 feet of oil

Kansas Completions

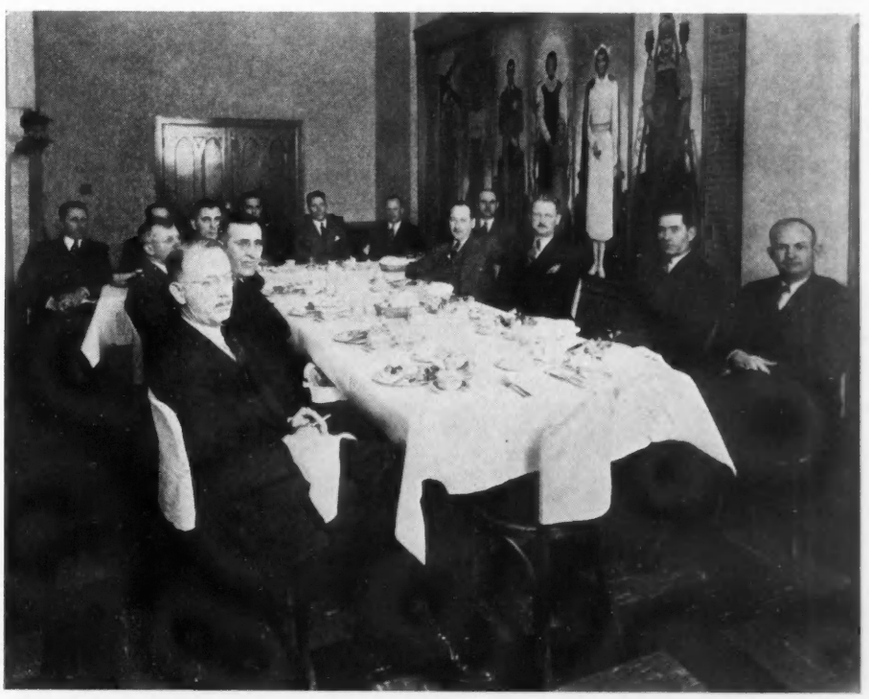
Company, Well and Location	Init. Prod. Bbls.	Depth
Barber—		
Pryor et al, Gant "D" 1, se nwc 17-31s-13w	*	4616
Barton—		
Sinclair-Prairie, Oser 1, nw sec sw 17-16s-11w	¶28.5	3263
Arvin et al, Steckel 4, cwl sw se sw 1-20s-11w	2635	3268
Shell, Kowalsky 1, sw nec se 18-20s-11w	969	3311
Butler—		
Rex et al, Farmer 2, swc nw 8-28s-7e	30	2661
Davis et al, Chinn 1, se nw nw 24-28s-7e	*	2810
Cowley—		
Texas Co., Hittle 8, sw sec 21-31s-4e	5229	3286
Hartman et al, Waite 3, sec nw 21-31s-4e	6174	3320
Ellis—		
Murphy, Ramsey 4, se ne sw 23-11s-17w	3500	3416
Hall, Oswald "B" 12, nw sw se 11-12s-16w	452	3030
Bridgeport, Froeich 1, csl sw nw sw 34-12s-16w	*	3540
Ellsworth—		
Continental et al, Janzen 1, csl sw nw ne 27-17s-8w	*	3452
Reno—		
Olsen et al, Roberts 4, c sw sw 25-23s-4w	*	3330
Barnsdall, Krehbiel 1, nec 18-25s-5w	*	4000
Rice—		
Murfin, Habiger 1, swc 6-18s-9w	*	3270
Kansas Drlg. Co., Campbell 1, nw sw nw 27-19s-9w	*	3256
Cities Service, Pulliam 1, 110 ft s cwl nw ne se 33-19s-9w	1126	3224
Texon, Peterson 2, nw sw se 10-20s-9w	538	3232
Sedgwick—		
Hudson et al, Fulton 1, nec se 35-28s-1e	*	2355
Stafford—		
Stanolind, Hartnett 9, csl sw nw nw 13-24s-11w	581	3781
Volker "A" 6, cwl sw se ne 23-24s-11w	Abnd.	Lcn.
Ferris "B" 8, cwl nw se nw 25-24s-11w	Abnd.	Lcn.

*Failures; †Junked; ¶Million cu. ft. gas.

Gas measurement conference planned for April 18-20

The executive committee of the Southwestern Gas Measurement Short Course, in meeting at the University of Oklahoma, Norman, Oklahoma, set the dates for this year's gas conference as April 18, 19 and 20. Plans were sketched regarding programs and it was decided to broaden the scope of the conference to include angles of measurement only lightly touched on during past conferences. The Short Course has become an important factor in the petroleum industry's gas engineering department. Attendance and interest have steadily increased, paralleling the value and scope of the discussions. Consideration is being given expansion of facilities at the university to guarantee even greater conferences in the future.

The next meeting of the general committee will be held in Tulsa, March 13. Fay C. Walters, chairman of the program committee, will at that time present his program for formal approval.



Executive Committee, Southwestern Gas Measurement Short Course. Reading from left to right around the table are: J. H. Satterwhite, G. B. Lane, C. A. Gibson, Gilbert Estill, R. L. Rountree, J. H. Page, Fay C. Walters, L. G. Rheinberger, Dean W. H. Carson, D. A. Sillers, W. R. McLaughlin, Max K. Watson, Earl Kightlinger and R. M. Scofield. Miss Kate A. Niblack, also a committee member, although in attendance was not present when the picture was taken. Other committee members are R. D. Hanley, Magnolia Petroleum Company, Dallas; W. G. McCullough, Phillips Petroleum Company, Bartlesville, Oklahoma; E. M. Meyers, Oklahoma Corporation Commission, Oklahoma City; J. H. Page, Kansas Corporation Commission, Wichita, Kansas; E. H. Poe, secretary of Natural Gas Section of American Gas Association, New York; William F. Lowe, secretary Natural Gasoline Association of America, Tulsa, and G. B. Lane, The Foxboro Company, Dallas.

in the hole in King 1, NW SW NW 27-31-4e, total depth 3468 feet. The Hittle pool produces from both the Kansas City lime and the Arbuckle lime, the latter yielding wells of high potential.

Another extension for the Campbell pool, Rice County, seemed assured from action of the test of Duwe & Farris, Lucas 1, SE NE NW 33-19-9w, which had 3000 feet of oil in the hole from 3229 feet in Arbuckle lime. It is a half mile northwest of production. The well is ready for a pumping test.

The extension of a mile to the south for the Leesburgh pool, Stafford County, indicated for the past two weeks, became a fact last week when Russell 1, C SW NE 13-25-13w, was completed for 2843 barrels initial from 4075 feet in Arbuckle lime. The oil tested 38-gravity. It is the third well in the pool. Continental Oil Company holds leases on 1760 acres in the pool.

A third well was started last week for the newly discovered Peavey pool, Ellis County, by Phillips Petroleum Company, whose Peavey 1, SWc 13-11-18w, is an offset to the two producers completed by Darby Petroleum Corporation, the discoverer. The Phillips well is a location to the north in the direction of the Burnett South pool. Indications are that further drilling will connect the two pools, which are 2½ miles apart.

The Cunningham field, Pratt County, had its gas production extended a half mile southeast by a Viola lime completion for 28,000,000 cubic feet. Drillers Gas Company drilled Hoagland 1, SE NW NE 27-26-11w, to 4078 feet. Top of the lime was at 4062 feet.

A showing of both oil and gas in a wildcat a mile south of the Wellman gas field, Rice County, indicated possible Misener-sand production. W. E. Rennie's, Williams 1, C S½ SE SW 27-21-9w, had the showing at 3460 feet and will make a test.

The Cowley County wildcat of Phillips Petroleum Company, Esch 1, SE NE 19-33-6e, was shut down for orders after drilling to 3552 feet in Arbuckle lime with nothing showing.

Second Missouri test getting ready to start

St. Joseph.—One location was added to the play over the Forrest City Basin last week when Patsy Oil Company, Shawnee, Oklahoma, made preparations for drilling in Holt County, Lawrence 1, SEc 24-53n-40w.

The one drilling well, started last week, was shut down after setting surface pipe at 208 feet. It is the test of J. H. Everett, Spring 1, SWc SE 30-62s-38w, Holt County.

The Missouri part of the Forrest City Basin play now has 8 spots indicated for tests. One well has started, another derrick is up and the others are either locations announced or contemplated.

Chief activity, however, is to sell acreage around the drilling sites. Major concerns, which also have large acreage holdings, are being solicited for support.

C. L. STAATS, superintendent of the land department of United Carbon Company, Charleston, West Virginia, and C. B. Wilson, chief engineer, were touring Mid-Continent oil centers last week.

Illinois Developments

Washington County extension well showing in Benoist. Lake Centralia-Salem south outpost test is too far south.

Olney, Ill.—Press Cochrane and G. H. Blankenship's Oak Grove Cemetery 1, SE SE SW 15-3s-3w, Pilot Knob Township, Washington County, drilled 3 feet of Benoist sand saturation, topped at 1267 feet, and shut down to set casing. The test, sometimes referred to as Press Cochrane's Blankenship 1, is 1¼ miles southwest of G. H. Blankenship's J. L. Dennis 1, which was the county's first oil well when completed a month ago with an initial production of 25 barrels daily.

Successful completion of the test would force at least four offsets by major companies, with other drilling commitments likely to give the county 20 active operations within the next two months. Storage tanks were being erected to serve both wells, operators planning to truck production to Centralia or Nashville.

Louis C. Simmel's Mary Keeler 1, wildcat in the NE NE SE 7-3n-8w, Collinsville Township, Madison County, was preparing to drill plugs to 8 feet of Niagaran saturation, topped at 1281 feet. Reports that the saturation appeared sufficient to make a well could not be confirmed. Simmel announced location for Kimsey 1, NE NE 5-5s-1w, 2 miles south of Tamaroa, which will be carried to the McClosky. This operator drilled a dry hole in this vicinity last year.

In Wayne County, New Penn Development Company's B. O. Scott 1, NW NW SW 7-2s-9e, Leech Township, drilled the cement plug to the McClosky, from where a 27-foot saturated core had previously been taken, but recovered no oil on swabbing. Operators planned to let the test stand idle for about two weeks, and when weather permits move in for acid treatment. Successful completion would open a new Wayne County pool about 6 miles east of Fairfield.

A closely-watched deep test, Kingwood Oil Company and Gulf Oil Corporation's Burge 1, NE NE SE 18-2n-2e, south outpost to the Lake Centralia-Salem pool of Marion County, was abandoned at 3658 feet, more than 200 feet in the Devonian. Too far south in the opinion of some geologists who believe Devonian production will be added to the prolific Benoist and McClosky pay formations in the pool, the test is the deepest thus far in the area.

A half-mile north, W. S. Tatum's English 7, SW 8-1n-2e, the only other Devonian test in the county, was nearing the 2900-foot mark, still having trouble retaining circulation because of a spongy lime formation at about 2700 feet.

Completion of Dyson & Anderson's Ed Wheeler 1, Section 24-4n-9e, 5 miles northwest of here, Richland County, was delayed while operators moved in cable tools to clean out the hole. Having cored 14 feet of saturation a week ago, it was drilled 12 feet deeper with drilling time indicating continuation of the porous stratum. Present bottom is at 2586 feet. The test promises a mile east extension to the Cypress sand pool opened several months ago by Pure Oil Company.

An effort to make a McClosky lime producer of Palaciene Oil Company's Inland Steel Company 1, wildcat in C SE NE 29-4s-2e, Jefferson County, was

Illinois Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Clinton County—		
Shell, Allison 11	35	1382
Newton & Ward, Gross 6	81	976
Cumberland County—		
Doran et al, H. Haskett 1	*	2326
Fayette County—		
Carter, Ramsey 2	240	1589
Curtis Baker 1	344	1561
Curtis Baker 2	143	1557
N. M. Hopper 4	276	1514
N. M. Hopper 9	125	1573
Mary Kistler 1	400	1481
Frank Quade 2	168	1510
Lilly Mills 1	432	1518
Marie Thornton 4	144	1562
Helen Walker 1	240	1558
Lewis Ripley 4	284	1560
Richard Larrimore 5	82	1563
Richard Larrimore 6	60	1589
Charity McClain 1	980	1579
Robert E. McCloy 1	714	1563
Martha Tirrey 1	544	1573
Mable Durbin 2	392	1520
Harvey Durbin 5	120	1523
Magnolia, Clow 19	343	1534
Clow 21	1008	1522
Minerva Oil Co., Richardson 2	*	1632
Jarvis Bros., Homans 4B	130	1595
Homan 5B	80	1595
Homan 6B	150	1584
Shell, Fulton 4	100	1588
Oil, Inc., Blurton 3	461	1565
W. B. Johnson, Stewart 1	76	1545
Jefferson County—		
Lundy & Winkler, Martin 1	*	2000
Carter, Copple 1	200	1930
Palaciene & Eason, Inland Steel Co. 1	*	3165
Lawrence County—		
Kesl et al, Scott Gray 1B	¶23.00	1115
Kentucky Natural Gas Corp., and W. C. McBride, Inc., Benson-White 1	¶2.35	1128
Macon County—		
Decatur O&G Co., Cook 1	*	3175
Marion County—		
Texas Co., Kalkbrenner 9	175	1796
Kalkbrenner 11	250	1987
Kalkbrenner 12	315	1989
Kalkbrenner 14	1050	1984
C. E. Richardson 1B	280	1287
H. Small 5	77	2014
H. Small 6	77	2010
H. Small 7	250	2009
C. E. Bundy 2	315	1792
O. Johnson 4	245	1744
G. Johnson 3	1386	1976
M. A. Tate 1	45	1769
W. Martin 3	130	1833
C. Lee 1	511	1885
S. Parker 1	243	1918
S. Shereshoveck 2	56	1826
Ohio, R. L. Murray 6	178	2100
Matthew Young Heirs 10	91	1889
Rockhill Oil Co., Foster 12	398	1911
Kingwood & Bell, Shanafelt 10A	3050	2031
Shanafelt 11A	1335	2014
Kingwood Oil Co., Burge 1	*	3658
Magnolia, Shanafelt 13	192	1887
W. B. Young 13	720	1995
J. H. Young 31	600	1802
J. H. Young 33	960	1784
Zephyr Dr. Co., Lankford 4	300	1905
George A. Mercer 1	58	2134
Wabash County—		
Cecil Keneipp, Kogan 1	*	1085
Wayne County—		
Thompson Dr. Co., Briscoe 1	*	3172
Pure, Gill 1	73	3050
Carl Hosselton 2A	90	3095

*Failures; †Junked; ¶Million cu. ft. gas.

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given up last week and the test abandoned. It had been drilled to 3165 feet and plugged back to the McClosky at 2874 feet.

Cable tools were moved in on Coates & Fields' Dr. E. A. Green 1, SW SW SW 16-9s-9e, Gold Hill Township, Gallatin County, and drilling resumed toward the St. Louis lime. Thirty miles from production, this wildcat has been closely watched since recovering good saturation in the Waltersburg sand several weeks ago. Salt water broke through during swabbing in the lower McClosky, however, bringing the decision to deepen.

Meanwhile, Coates' R. Strinson 1, SE SW 9-9s-9e, was drilling at 1100 feet with the Waltersburg sand as its destination. It was running higher than the neighboring Green 1, which encountered the sand at 1760 feet.

The Illinois Geological Survey reported last week that 2600 producing wells have been drilled in new fields, of which 11 in the Patoka pool of Marion County were abandoned during the past year. Dry holes drilled within ¼ mile of production in development of 28 new pools, scattered in 10 counties, numbered 198.

Following are the number of producing wells, dry holes and wells presently drilling in the new pools, given in the order of their discovery.

Bartelso pool, Clinton County, 38 producing wells, 5 dry holes and 9 drilling; Patoka, Marion County, 104 wells, 20 dry holes, none drilling; Clay City, Clay and Wayne counties, 241 wells, 17 dry holes, 3 drilling; Rinard, Wayne County, 1 well, 2 dry holes, none drilling; Noble, Richland County, 150 wells, 29 dry holes, 4 drilling; Cisne, Wayne County, 36 wells, 7 dry holes, none drilling; Centralia, Clinton and Marion counties, 536 wells, 37 dry holes, 1 drilling; Beecher City-Louden, Fayette County, 632 wells, 29 dry holes, 7 drilling; Olney, Richland County, 31 wells, 11 dry holes, 1 drilling; Dix, Jefferson County, 39 wells, no dry holes, none drilling; Aden, Wayne County, 4 wells, 2 dry holes, none drilling; Flora, Clay County, 14 wells, 2 dry holes, 1 drilling; Schnell, Richland County, 5 wells, 5 dry holes, none drilling; Lake Centralia-Salem, Marion County, 676 wells, 20 dry holes, 20 drilling; Ina, Jefferson County, 1 well, 2 dry holes, none drilling; North Aden, Wayne County, 43 wells, 5 dry holes, 1 drilling; Leech Township, Wayne County, 2 wells, no dry holes, 1 drilling; St. James, Fayette County, 31 wells, no dry holes, none drilling; Roaches, Jefferson County, 4 wells, no dry holes, none drilling; Elk Prairie, Jefferson County, 1 well, no dry holes, none drilling; Sorento, Bond County, 1 well, no dry holes, none drilling; Boyleston, Wayne County, 3 wells, no dry holes, none drilling; Marcoe, Jefferson County, 1 well, no dry holes, none drilling; Mt. Erie, Wayne County, 1 well, no dry holes, none drilling; Enterprise, Wayne County, 2 wells, 2 dry holes, none drilling; Mattoon, Coles County, 1 well, 1 dry hole, 1 drilling; Cordes, Washington County, 1 well, 1 dry hole, 1 drilling; Barnhill, Wayne County, 1 well, 1 dry hole, none drilling.

Because of muddy roads and soggy ground, drilling operations in new fields had dropped to 41.

Indiana Developments

Third completion in Gibson County pool has 700 barrels. Operations hampered by high water and no line outlet.

Evansville, Ind. — Continental Oil Company's David M. Cooper 1, SW SE SE 12-3s-14w, Wabash Township, Gibson County, flowed 130 barrels in 4 hours through a ½-inch choke and was rated as a 700-barrel producer. It is the third well in the recently opened Cooper pool, first McClosky lime pool of Indiana and just across the Wabash River from Wabash County, Illinois.

Lack of pipe line facilities has caused the three wells to be shut in, and although there are a number of rumors concerning line construction, none could be traced to a definite announcement. Movement of oil by truck to Griffin and from there by tank car to northern refineries would entail a prohibitive expense.

In the same area, Earl Hollandsworth & Joe Bander's (Hollandsworth & Bander Drilling Company) David M. Cooper Estate 2, NE SW 13-3s-14w, an east offset to No. 1 by these operators which was the second completion in the pool, was threatened by high water while drilling below 2700 feet. Ray J. Ryan's Wm. & Brizella Dunn 1, NE SE SE 18-3s-13w, 1½ miles southeast of the discovery, was under water with bottom at 2852 feet, as was J. B. Bond's Perry Fleener 1, SE SE NW 25-3s-13w, Montgomery Township, a new location.

A new Spencer County test, Troy Refining Company's T. Anderson 1, NW 11-6s-4w, 1½ miles north of Troy, set surface casing and was drilling below 100 feet with cable tools. It will be carried to the McClosky. In this county, W. W. Damron's Shelby Wright 1, SE SW NE 19-7s-6w, Ohio Township, midway between Hatfield and Rockport, was drilling below surface pipe that was set at 51 feet.

E. J. Lambert et al's F. Lang 1, about 1½ miles northeast of Sycamore Oil Company's Prudential Life Insurance 1, near Richland, Spencer County, was moving in materials. It will be drilled by James Leggett.

Sycamore Oil Company's well was abandoned last week after salt water flooded the hole when casing was perforated in the Waltersburg sand and the McClosky lime. Located in NE SW NW 7-7s-7w, Luce Township, it had been drilled to 1783 feet. Elevation was 385 feet, Vienna was topped at 1110 feet, Tar Springs at 1130 feet, Hardinsburg at 1250 feet, Cypress at 1390 feet, Paint Creek at 1440 feet, Bethel lime at 1540 feet, Renault at 1580 feet, Aux Vases at 1600 feet, St. Genevieve at 1630 feet and McClosky at 1698 feet.

West Virginia Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Cabel County—		
Elkins Gas Co., Paugh 1	¶.26	3539
Calhoun County—		
E. Starcher, C. C. Starcher 3	¶.06	2285
Gilmer County—		
Pittsburgh & West Virginia Gas Co., Cottrill 7665	¶	1650
McKnight & Whiting, Vannoy 1	¶2.00	1975
Kanawha County—		
United Fuel Gas Co., Ray 4815	¶7.81	5041
Wines 4768	¶11.04	5019
Lincoln County—		
R. H. Adkins, Collins 1	¶.16	2279
Roane County—		
Reed et al, P. V. Litton 4	2	1767

* Failures; † Junked; ¶ Million cu. ft. gas.

Ohio Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Guernsey County—		
Jones & Jewell, Davidson 1	*	1396
Licking County—		
Bebout, Haughn 1	¶1.—	2183
Ohio Gas Supply Co., Steves 1	¶2.50	2185
Medina County—		
Edson & Son, Ripley 42	12	489
Meigs County—		
Marshall, Hysell 4	¶.35	903
Monroe County—		
Robinson, Miracle 1	¶.24	1351
Perry County—		
Kissling Drlg. Co., Bringardner & Conkle 3	¶.07	752
Seneca County—		
Shaw, Zoller 1	5	1764
Stark County—		
Obermiller Bros., Kranch 1	¶.18	4453
Washington County—		
Dixon et al, Johnson 1		1892
Carpenter & Parks, Pryor 1	¶.45	1201
Don Smith, Robinson 17	2	696
Henry Gas Co., Mendenhall 1	*	1965

* Failures; † Junked; ¶ Million cu. ft. gas.

Indiana Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Knox County—		
O. A. Thayer, W. H. Bond 1	*	846
Vanderburg County—		
John F. Drake, L. Schmadel 2	*	1157

*Failures; †Junked; ¶Million cu. ft. gas.

Kentucky Fields

Henderson County test of Devonian ends in failure

Owensboro, Ky.—Henderson County's first Devonian lime test proved a failure when Magnolia Petroleum Company's J. E. Casey 1, near Spottsville, encountered a flow of salt water 389 feet in that formation, at 4384 feet. The hole will be plugged back to 3200 feet where saturation was encountered in a stray sand.

In Hopkins County, Gulf Refining Company's L. W. Schmetzer (Simon Clements) 1, 7 miles southwest of Mad-

Kentucky Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Butler County—		
Evans, V. Harrison 4	10	370
Hopkins County—		
Clements et al, Nelez 1	¶1.—	1306
McClean County—		
Ellis et al, Schockley 4	*	923
Daly et al, Butterfield 6	*	1175
Powell County—		
Perry et al, Sparks 1	*	....

* Failures; † Junked; ¶ Million cu. ft. gas.

isonville, could not be commercially produced in any of four levels to which it had plugged back after drilling to 4586 feet, the Devonian formation. Tests were made at 2000 feet, 1800 feet, 1600 feet and 720 feet. The wildcat is now shut down for orders.

Jess Ashby's Charles Carden 1, wildcat near Dukehurst, 6 miles from Hartford, Ohio County, was drilling at 130 feet. In this county, W. E. Neal et al's J. C. Nabors 1, outpost of the Dundee pool, was fishing for lost tools after drilling a Jett sand believed capable of making a commercial producer. These operators have spudded J. C. Nabors 2, will drill Jess Mattingly 1, two locations away, and last week abandoned John Bellamy 1, 2 miles northwest of Fordsville. Seven feet of Barlow sand and 6 feet of Jett sand were cored, but neither had sufficient saturation to make a well.

Pecos Valley hearing

Revision of the method of allocation in the Pecos Valley high-gravity field, Pecos and Ward counties, was requested last week at a hearing before the Texas Railroad Commission. Pantex Oil Corporation asked that the acreage factor be removed from the order and that a potential factor be substituted. The company operates leases in the river bed and it is expected that the tract will be more densely drilled than one well to 10 acres, the spacing provided for other leases in the field.

The remaining operators favored continuance of proration on acreage and per-well, and Railroad Commissioner Thompson, before whom the hearing was held, indicated that he would recommend the commission sustain its order fixing this plan of operation.

Pennsylvania Completion

Company, Well and Location	Init. Prod. Bbls.	Depth
Bradford District—		
Hardwick, Rice & Tuohy, Fisher..	1	....
Tapp, Gallets & Buffington, Trs., Fee	15	....
Penn Valley Crude Oil Corp., Redfield	6	....
Forest Oil Corp.	1	....
Niagara Oil Corp., 2 wells	2	....
Bradford Transit Co., 7 wells	7	....
Bradford: Water Intake Wells—		
Esther Oil, Inc., Lawton	..	....
Niagara Oil Corp., 2 wells	..	....
Forest Oil Corp.	..	....
Butler-Armstrong District—		
Walters & Co., J. B. Renison	3	....
Middle District—		
M. M. Master, Gibbs	1	....
New York-Pennsylvania: Gas Field—		
Sylvania Corp., Roy Harrison	¶	....
Van Gleder et al, Fred Farnham..	*	....

* Failures; † Junked; ¶ Million cu. ft. gas.

New York Completion

Company, Well and Location	Init. Prod. Bbls.	Depth
Allegany County—		
Shaner & Wakeman, Fee farm, Bolivar	4	1295
Sloan & Zook, Phillips farm, Bolivar	5	1375
Ada May Gray, Smith & Gray farm, Genesee	1	1410
Bradford Prod. Corp., Willets farm, Genesee	1	1425
Sloan & Zook, Lot 8, Genesee	2	1390
Wilson Oil Co., Wales farm, Genesee	1	1386
A. C. A. Oil Corp., Burdick farm, Wirt	3	1325
Allegany: Water Intake Wells—		
Porge Oil Co., Anderson-Otis farm	..	1378
L. H. Thornton et al, Fassett farm, Alma	..	1280
Fassett farm, Alma	..	1295

* Failures; † Junked; ¶ Million cu. ft. gas.

West Texas Fields

Merging of Bennett and Wasson fields near realization. Garza County Swenson well gets increased water flow.

Midland, Texas.—The merger of the Bennett and Wasson fields, which are the most important oil areas in the north portion of the Permian Basin, advanced nearer realization the past week when an outpost well cut the interval between the fields to 3 miles. The Wasson field became the largest oil producing area in West Texas last year through a series of extensions along a northwest-to-southeast and east trend.

Texas Pacific Coal & Oil Company's A. M. Brownfield 1, near SE SE NE Section 802, Block D, situated 1½ miles north of production in the east portion of the Wasson field, and on a direct strike with the most favorable production trend in the Bennett field, qualified as a producer in flowing by heads from broken lime at 5011-5151 feet. The well later swabbed 127 barrels of oil in 24 hours, then pulled tubing to deepen about 18 feet. It will be shot with nitro. Top of Yates was called at 3070 feet, with an elevation of 3583 feet, being 16 feet higher on this marker than the nearest producer.

The largest well potentials and highest structural position in the Bennett field is on the extreme southwest edge and centering on John Mabee et al's Willard 480-acre lease. The unexplored interval between this property and the Brownfield outpost will be given more tests shortly.

Shell Petroleum Corporation's Ruyts 1, located 1¼ miles southeast of production in the Bennett field, was listed as a completion the past week, pumping 161 barrels of oil, plus 19 percent water, at 5229 feet. It was originally drilled to 5266 feet about mid-November. Shell Petroleum Corporation's Waples-Platter Company 1, 3-mile northeast outpost for the Bennett field, is changing to cable tools at 5000 feet.

Slaughter Outpost Slated

Another outpost for the Slaughter field, Hockley County, is to be drilled by Sid W. Richardson et al following the completion of A. E. Coe 1, SWc Labor 53, League 40, rated at 2048 barrels initial, based upon a 6-hour gauge after building up pressure. This well is 1½ miles northeast of nearest production, and was plugged back from water at 5182 feet, or 1636 feet sub sea, to 4982 feet. The oil saturated zone, topped at 4893 feet, with first free oil at 4937 feet, was treated with 8000 gallons of acid. Richardson et al are moving rig to the H. J. Denton 163.3-acre lease, embracing Labor 41, League 40, ¾-mile northwest of Coe 1, to fulfill a 5200-foot depth contract. Sun Oil Company farmed out this lease late last year for a test, retaining ⅛ over-riding royalty on wells that produce in excess of 25 barrels daily.

Sinclair Prairie Oil Company's Fay Holt 1, SEc PSL Section 1, Block A, ¾-mile west of production in the north end of the North Cowden field, Ector County, flowed by heads from broken pay at 4165-80 feet and 4186-4207 feet. No appreciable increase in the volume of fluid was recorded in drilling to 4285 feet. It is certain to make a commercial producer after the customary nitro shot. Atlantic Refining Company et al's Cowden 1-B, Andrews County semi-wildcat and on a strike between the Emma and North Cowden fields, is showing for a 20-barrel pumper after plugging back from 4310 feet to 4180 feet for nitro shot and acid treatments.

Swenson Well Increases Water Flow

An increase in the yield of salt water followed the treatment of the Gulf Oil Corporation's Swenson 1-B, northeastern Garza County deep prospect, with 2000 gallons of acid through perforated casing at 7327-34 feet. The well swabbed and flowed 160 barrels oil and 168 barrels of water in 24 hours after recovering the acid load, and last mid-week was swabbing 126 barrels oil and 113 barrels water daily. The

Texas Panhandle Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Carson County—		
Magnolia, Fee (lease 244) 51	178	2994
Gray County—		
Dolomite Prod. Co., Sailor 5,	388	3228
Hutchinson County—		
Gulf & Panhandle Ref. Co., Dial 90	194	2984
Moore County—		
Shamrock O&G Corp., Sneed 12..	¶26.1	2668
Potter County—		
Canadian River Gas Co., Masterson 4-A	¶56	2160
Wheeler County—		
Pendleton & Vaughn, T. D. Holland 1	*	2246

* Failures; † Junked; ¶ Million cu. ft. gas.

West Texas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Andrews County (Fuhrman)—		
Fuhrman Pet. Corp., Ford 12	1808	4455
Crane County (Gulf-Waddell)—		
Gulf, W. N. Waddell 25	15,999	3518
Crane County (McClintic)—		
Mabee et al, McClintic 10	463	3007
Ector County (Foster)—		
Shell, J. E. Witcher 8-A	2238	4191
Stanolind, E. F. Cowden 16-B	1338	4170
Ector County (Goldsmith)—		
Gulf, Goldsmith 165	2376	4190
Goldsmith 166	1568	4200
Goldsmith 168	1904	4210
Goldsmith 169	388	4251
Phillips-Pure, Cowden 57	683	4164
Ector County (Harper)—		
Barnsdall, Parker 1	607	4230
Ector County (Jordan)—		
Atlantic, University 5-D	1146	3655
Ector County (North Cowden)—		
Landreth-Tide Water-Phillips, Holt 7	1524	4246
Irion County (Wildcat)—		
Crabb et al, Noelke 1	*	1805
Jones County (Wildcats)—		
Buffalo Oil Co., H. Wood 1	*	2258
Gillespie-Fain & McGaha, McKeever 1	*	2350
Pecos County (Payton)—		
Pecos State Oil Co., Pecos River 2	240	2040
Pecos County (Pecos Valley)—		
Arnold Oil Co., Byrne 2	30	1369
Byrne 3	20	1385
Upton County (Gulf-McElroy)—		
Gulf, J. T. McElroy 189	370	3035
Crier-McElroy 36	2203	2936
Upton County (McCamey)—		
Shell, D. Bowen 40	516	2216
Ward County—		
Gulf, Hutchings 120	557	2785
Winkler County (Henderson)—		
W. K. Royalty Co., Walton-Humble 4-D	704	3060
Yoakum County (Bennett)—		
Honolulu Oil Corp., Bennett 10-695	1857	5250
T. P. Coal & Oil Co., Bennett 16-a	2780	5245
Yoakum County (Wasson)—		
Humble, Wooten 7	1007	5150

* Failures; † Junked; ¶ Million cu. ft. gas.

outlook for commercial production from this wildcat was enhanced when it flowed 125 barrels oil and 40 barrels water daily through tubing before using acid. The gain in the volume of water may result in the well being temporarily abandoned to await the outcome of a second test to be drilled by the company on the Swenson ranch.

Humble Oil & Refining Company's Matador 1, Dickens County wildcat, was drilling at 6780 feet, and will explore the Pennsylvanian horizon that is the source of the oil production for the deep Garza County test.

Southeast extension for the prolific portion of the Gulf-Waddell field, northeastern Crane County, was in process of completion late last week, and a big well was finished along this trend. Gulf Oil Corporation's W. N. Waddell 25, near SW SW NE PSL Section 11, Block B-23, earned a potential rating of 15,999 barrels of 34.2 gravity oil natural from main pay at 3517-18 feet. The well flowed 4263 barrels of fluid, testing 8 percent water and 4 percent b.s., in 6 hours, and the potential was based on a yield of 1999.87 barrels oil and 193 barrels water the last 3 hours. Magnolia Petroleum Company's W. P. Edwards 12, SWc PSL Section 12, Block B-23, ¾-mile southeast of the above big well, logged first free oil in the hole at 3485-90 feet, with an elevation of 2768 feet. The fluid level rose to 1700 feet in drilling to 3529 feet, being near the projected water level, The well was awaiting results of treatment with 5000 gallons late last week.

Carlisle production extended by deep Palo Pinto producer

Abilene, Texas.—The productive limits of the Carlisle pool, Stonewall County, were extended 1800 feet northwest when W. I. Southern, Inc.'s Carlisle 2, pumped and flowed 250 barrels of oil initial from Palo Pinto lime at 5137-52 feet. This is the deepest recorded producing depth for the Lower Canyon member in the district, and is higher than the discovery drilled by Swanson and Parriott, who sold their interest to the above Tulsa concern after giving the county its first oil well last July.

Forest Development Corporation's Boyd 1, 7 miles northeast of Aspermont, has plugged back from water at 4760 feet to 4732 feet. Top of Palo Pinto was logged at 4687 feet, with an elevation of 1670 feet, and saturation topped at 4708 feet affords promise of a small oil well.

Completion gauge given Gregg Oil Company et al's Appling 1, north central Jones County wildcat, listed last week as showing for a producer credited the well with flowing 206 barrels of 32-gravity oil natural in 12 hours from sandy lime at 2631-38 feet. The performance of this isolated well will attract more development to the west and southwest. Dry holes defined production sharply to the east.

Revival of interest in the Ivy multiple-pay area in northwest Shackelford County resulted from the completion of Owens-Snebold Oil Corporation's McKeever 1, quarter-mile northwest outpost, with a natural flow rated at 50 barrels hourly from Palo Pinto lime at 3180-87 feet.

North Texas Fields

Week's three wildcat strikes best of six this year. Montague County gets three deep wildcat locations.

Wichita Falls, Texas.—Flowing production developed by Strawn horizon wildcats in northwestern Archer and Clay counties rated three discoveries among the best of six Strawn strikes made in North Texas since the first of the year. The district has completed 14 oil producing wildcats this year, or more than one per week, and is deriving considerable development work in the aggregate from these additions.

Clay County, oldest producing area in the district, recorded a prolific Strawn strike March 10 when L. T. Burns et al's Browning 1, SEc Block 94, J. K. Belcher Survey, flowed natural from saturation at 4432-4461 feet. The well flowed 40 barrels the first hour after swabbing down, and later increased to 60 barrels per hour for 2 hours. On a more extended gauge the well averaged 35 barrels of 44.2 gravity oil hourly through chokes varying from ¼- to 1-inch, with 300-pound tubing pressure and 650 pounds on the casing. Development obligations were assumed by some purchasers of acreage in the immediate area and an east offset has been authorized by Burns et al.

E. P. Griffin et al's Waggoner Estate 1, northwestern Archer County and 4½ miles southwest of deep production at K-M-A, opened a lower Strawn pool with a natural flow from saturation at 4393-4408 feet. The producing capacity of the well has not been established, although it flowed 105 barrels of high-gravity oil in 1 hour after building up pressure. It is located C SE SE H&TC Section 3, Block 4. Location has been made for a north offset by the owners.

Montague County gained three deep wildcat projects the past week, including two that are contracted to 4500 feet, and Cooke County added a 5000-foot obligation. Locations of each are listed under wildcats (see page 95). In the Bonita pool, eastern Montague County, United Producers Company and Continental Oil Company's Langford 1, south offset to the discovery, checked flat with the producer in logging top of Strawn pay at 2920 feet. Pipe has been run for a production test. Benton & Holmes' Joe Bowers 1, the discovery, has been flowing about 70 barrels daily through casing from broken pay at 2887-98 feet. The elevation of the latter is 33 feet lower.

Tank-truck deliveries of crude to a refinery at Muenster is providing the first market outlet available to Rogers & Rogers' Burnett 1, lower Strawn discovery on the west edge of Nocona, Montague County. The proposed sale of this 60-acre drilling site and well to Sunray Oil Company last February was cancelled, although the latter obtained delivery on acreage interest reported as being sold by Ramsey Petroleum Corporation. Rogers & Rogers will start operations on a north offset to their producer shortly.

The east extension of the Castleberry pool, Wilbarger County, recorded its first Canyon production when Phillips Petroleum Company and King Oil Company's Waggoner Estate-King 3, SW NE NW H&TC Section 63, Block 14, flowed 31 barrels of 41.3 gravity oil per hour on brief gauge from saturation at 3207-15 feet. Top of lime was called at 3205 feet and pipe set at 3207 feet. This same pay was uncovered in the Castleberry pool last year.

Sikes spacing order

The Texas Railroad Commission has issued an order providing for 20-acre spacing in the new Sikes field, Archer County. Regulations provide for 100 feet of surface casing cemented to the surface and an oil string set with 100 sacks of cement.

Proration is to be on acreage and per well with 50 percent allocated on each factor. As much as 30 acres may be assigned to the final well drilled on any lease for proration purposes in order to avoid the necessity for drilling fractional units.

North Texas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Archer County—		
Cable Oil Co., Crowley 4-A, sec 28.	171	982
Shappell Oil Co., G. Benn 17, sec 27	26	1011
Underwood Drl. Co., V. W. Kunkle 1, blk 12	*	1289
Archer County (Wildcat)—		
Griffin et al, J. T. Longley 1	*	1301
Harwell et al, W. Ford 1	*	4647
Clay County—		
Metzner & Burns, Thornberry 27-B, blk 6	3	210
Cooke County—		
Seitz-Comegys & Seitz, Inc., Felderhoff 3-B	*	1549
Jack County—		
Champlin & Bass, Inc., Gahagan 1-A	353	3193
Cohen et al, First Nat'l Bank (Bryson) 5	119	2365
Compton et al, R. Wilson 2	*	410
Gilmore et al, John Burt 1	*	450
Rowan Drl. Co. et al, S. J. Bailey 2	166	2834
Dr. R. G. Stevens et al, Beasley 2	23	2990
Jack County (Wildcat)—		
Pitzer-West et al, Fred Warren 1, sec 2784	125	4480
Montague County—		
Seitz-Comegys & Seitz, Inc., King-Conoco 9	325	2143
Wichita County (K-M-A)—		
Board of Mineral Dev.-G. W. Drl. Co., Big Wichita River 4	840	3723
Consolidated Oil Co., Ferguson 17, blk 10	1050	3795
Mrs. J. James 3, sec 16	1200	3987
Deep Oil Dev. Co., R. J. Bradley 1	984	3784
Munger Bros. 20-A, blk 31	696	3880
E. C. Oil Co., Mangold 9, blk 32	544	3850
Golding Est. & Cochran, Preston 6, sec 27	*	4007
Wallace et al, Logan-Deep 2-B, blk 21	856	3790
Wichita County—		
Cochran & Cain, Waggoner Est. 1-B	6	1960
Hawkins & McQuigg, Goetze 7	2	433
N. H. Martin & Son, Martin 1-S, sec 36	*	649
M. Staniforth et al, S. George 1	55	1370
Young County—		
W. F. Collins et al, Young County Lumber Co. 2	*	631
Magnus & J. McLester, B. B. Teague 1	*	3926
W. E. Prod. Co., H. H. Brown 1, sec 624	375	4008
Brown 2, sec 624	636	3941
Young County (Wildcat)—		
K. R. March & Craig, Hunt-McClatchey 1, sec 79	40	1134

* Failures; † Junked; ¶ Million cu. ft. gas.

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● J. S. Abercrombie Co.-Harrison Oil Co., discoverers and developers of Old Ocean field, Texas' deepest production, had on January 1, 1939, completed 26 wells there at an average depth of 10,400 feet. Figure it for yourself . . . 51 miles of hole!

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East Texas Fields

Henderson County wildcat making Woodbine producer

Tyler, Texas.—A Woodbine sand oil prospect along the Mexia-Talco fault trend in northwestern Henderson County that has had merit since April, 1925, is due to complete its first producer early this week. Seven feet of broken and solid sand, carrying oil saturation, was logged by A. J. Tyler, Chas. C. Smith, Richards & Holloway's Rowe-Baker 1, 3½ miles northeast of the Flag Lake pool and 5 miles southwest of Mabank, in coring the Woodbine to 3147 feet. Top of the Woodbine series was logged at 3133 feet, with an elevation of 320 feet. The presence of oil saturation was confirmed by electrical survey. A string of 5½-inch pipe has been cemented at 3140 feet for a production test.

This Henderson County wildcat is located 1160 feet from the west and 150 feet from the south lines of the J. T. Childers Survey, being a northeast offset to the late Robert R. Penn et al's G. E. Murphy 1, which logged top of the Woodbine at 3150 feet, and show of oil in sand topped at 3165 feet, with an elevation of 322.9 feet. The test was deepened to 3262 feet and abandoned April 10, 1925, after unsuccessful tests. In plugging the hole a shutoff was not obtained, and in 1933 Murphy 1 began showing free oil with water. Later tests an extremely narrow producing structure as prevails at Flag Lake, and they were failures. W. C. Windsor, Pete Wiggins and the late Col. Alfred E. Humphreys held an interest in Murphy 1.

Third failure for the Navarro Crossing area, northwestern Houston County, was recorded when Humble Oil & Refining Company's G. W. Mobley 1, J. L. Rivere Survey, encountered salt water in Woodbine series at 5880-5960 feet, with an elevation of 254 feet. Austin chalk was logged at 4305-5615 feet. Mobley 1 is located southeast of Walter Goldston et al's Burns-Humble 1, which was abandoned in August, 1936, at 5899 feet after logging gas and distillate showings. Information yielded by this original test caused the area to be rated as a good prospect, and production was found last year by Humble Oil & Refining Company 1¼ miles to the northwest.

Humble Oil & Refining Company and Sun Oil Company's Swift 1, Leon County wildcat and 4 miles northwest of Navarro Crossing production, logged top of Austin chalk at 5140 feet, and was drilling hard chalk at 5200 feet.

George Strake et al's Farrier 1, projected lower Trinity test for the Yantis area, northwestern Wood County, was drilling in Georgetown lime at 5180 feet, with an elevation of 397 feet. Geological markers on this test are being withheld.

East Texas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Joiner Area—		
Humble, D. C. Joiner 1-B-a(7½-ac)	2000	3727
M. H. McMurrey et al, Fee Ashley 1	2400	3635
Overton Ref. Co., Clay Bros 17 (65.26-ac)	480	3572
Kilgore Area—		
General American Oil Co., J. E. Sexton 19 (100-ac)	150	3615
Humble, J. N. Peterson 45(222.1-ac)	7500	3607
H. R. Smith, Inc., L. Alexander 4 (3½-ac)	1800	3553
Freestone County (Wildcat)—		
Willis et al, W. W. Craig 1 (58¾-ac)	*	3752
Henderson County (Flag Lake)—		
Richards & Holloway, Tarkington-Empire 1 (30-ac)	110	3049
Houston County (Navarro Crossing)—		
Humble, Tom Tryon 1 (100-ac)	148	5880
Van Zandt County (Van)—		
Van Zandt Synd., C. S. Coker 5	*	1262
Marion County (Rodessa)—		
Red Iron Drlg. Co.'s Hanbury, Davis 2, W. R. Meyers sur	1242	5990

*Failures; †Junked; ¶Million cu. ft. gas.

Joaquin outpost has show of oil and gas

Shreveport.—Neal & McDaniel's C. W. McDaniel 1, William Snyder Survey, south outpost test at Joaquin, Shelby County, Texas, arranged to core at 3915 feet last week after a core from 3778 to 3793 feet showed 1 foot of sand with showings of oil, the remainder of the core showing gas. The well had previously shown mud cut with gas in a drill-stem test from 1380 to 1840 feet.

Sound safety to be followed at Houston Oil Show

In addition to putting on a valuable and instructive safety program, the Safety Committee will inaugurate safe practices with periodic inspections at the Oil-World Exposition to be held in the Coliseum at Houston, Texas, April 24 to 29, inclusive. The final program of the committee has been announced by J. J. Delahide, chairman, who has appointed subcommittees to take active charge of the various departments of safety work.

One committee with F. P. Werner, safety engineer for American Petroleum Company, chairman, will have charge of inspection of buildings, grounds, displays, demonstrations for safety guards and safe practices and operations of moving machinery. A First Aid Room will be located in the building and its maintenance will be under supervision of William T. Raney, American Red Cross.

Demonstrations on fires, explosions and approved safety equipment will be given daily by the Bartlesville, McAlester and Dallas stations of the United States Bureau of Mines. The bureau's rescue truck and equipment will be on display and a drilling well will be equipped with all safety devices to show the most modern devices now available. This work will be directed by G. M. Kintz, associate engineer, United States Bureau of Mines, Dallas.

The safety meetings will start at 6:30 p.m., April 27 with a stag party, including barbecue and entertainment, at the Texas Company Club House, Camp Beatty. This event will be for safety engineers, field men, oil company employees and their friends. Fred Rousseaux of The Texas Company is chairman of the committee in charge.

On the following morning April 28 a meeting will be held in the Music Hall of the Coliseum, with T. S. Maffitt of the Houston Oil Company presiding. An address on "Safety Meetings from the Field Men's Viewpoint" will be given by R. M. Bradbury, superintendent for Houston Oil Company, Kilgore, Texas. This will be followed by a talk on "Oil Field Fleet Operations," by M. E. Brock, assistant to the vice president, Gulf Oil Corporation. S. E. Whiting, vice president of Liberty Mutual Insurance Company, Boston, will then give a demonstration on rescue of workmen from tanks and enclosed places.

In the afternoon there will be a meeting in the Music Hall with P. E. Keegan of the personnel and employment department of Shell Petroleum Corporation, presiding. Speakers at this meeting will be Daniel Harrington, chief safety engineer, United States Bureau of Mines, Washington, D. C., and J. J. Forbes, supervising safety engineer, United States Bureau of Mines, Pittsburgh. Demonstrations on petroleum fires, gases, explosions and permissible equipment will be given by G. M. Kintz, associate engineer, Bureau of Mines, Dallas, Texas.

At 7:30 p.m., April 28, a general meeting will be held in the Music Hall with C. A. Miller, assistant personnel manager, The Texas Company, presiding. A. A. Nicholson, personnel manager for The Texas Company, New York, will speak on "Is Industry at the End of the Road?" This will be followed by presentation of trophies and medals by Governor W. Lee O'Daniel of Texas to the petroleum industry's employees who have saved lives of fellow workmen by first aid and rescue methods.

According to Ed G. Lenzner, general manager of the Oil-World Exposition, the Safety Committee has done exceptionally good work in the preparation of the safety program and has taken all precautions against hazards of any kind that might arise during an event of this magnitude. The committee consists of the following members: J. J. Delahide, B. F. McDonald Company; R. B. Roaper, Humble Oil & Refining Company; C. A. Miller, The Texas Company; C. L. Hightower, United Gas System; P. O. Keegan, Shell Petroleum Corporation; F. P. Werner, American Petroleum Company; L. B. Conner, The Texas Company; H. L. Rankin, Gulf Oil Corporation; G. J. Gruber, Mine Safety Appliances Company; R. H. Horde, Shell Petroleum Corporation; T. S. Maffit, Jr., Houston Oil Company of Texas; William Grant, Jr., Humble Oil & Refining Company; C. M. Liles, Magnolia Petroleum Company; Howard G. Bourne, American Optical Company; Don Cross, Accident Prevention Company; J. L. Manes, Sun Oil Company; I. L. Risinger, Magnolia Petroleum Company; E. W. Breeland, Lone Star Gas Company; H. B. Williams, Pan American Petroleum Company; William T. Raney, American Red Cross; G. M. Kintz, United States Bureau of Mines; E. G. Lenzner, Oil-World Exposition, Inc.; Joe H. Russell, Gulf Oil Corporation; C. W. Coleman, Gulf Oil Corporation.

Joaquin, Texas.—Portex Oil & Gas Company shipped 51 tank cars of distillate from its extraction and re-cycling plant at Joaquin during February. The distillate was consigned to Houston. Pundt and associates are shipping production from their Pickering Lumber Company 1, William Snyder Survey, to Shreveport by tank cars.

Southwest Texas Fields

Bird Island oil discovery gets official production test. Riverside prospects are dimmed by late drilling results.

Corpus Christi. — Development of crude oil production in the Bird Island submerged field of Kleberg County, further expansion of several other producing sectors and increased drilling in booming San Patricio County summed up another busy week for the South Texas Gulf Coast.

On a railroad commission potential test, Pure Oil Company et al's State of Texas 1, block 155, and 3500 feet northwest of the discovery of the Bird Island field, flowed 68 barrels of oil per day through 11/64-inch choke with working pressure on tubing ranging from 2325 to 2500 pounds. The well had been carried to 7320 feet, casing being landed on bottom and perforated at 7235-47 feet with 72 shots. The discovery well and only other producer was completed in the same sand as a gas and distillate well.

Jim Wells County had two wells holding considerable interest. Tom Graham's N. O. Adams 1, wildcat about two miles east of the east Alice field and in the Lopez grant, had been drilled to 5850 feet, sidewall samples indicating a sand at 4821-42 feet with excellent oil showing. Casing was landed at 5021 feet, and production attempt will be through perforations. One mile west and north of the above well, Gravis & Doran perforated at 4808-22 feet in Clark 1 and it was cleaning into the pits. These wells are expected to open another field for the Alice group.

In the extreme southern portion of the county on the La Gloria prospect, Magnolia Petroleum Company was ready to test a 6500-foot sand. A zone just below 6600 feet showed dry, while the 7000-7100 foot sand, after perforations were made, showed salt water. The well is Sam Maun 1 and is just southwest of the La Gloria townsite.

Nueces and San Patricio counties' Riverside field, which was expected to be an important producing area, fell flat with all outposts failing to show anything.

Riverside Has Reverses

Republic Natural Gas Company's Crockett 1, about 14,000 feet north of production, was going ahead near 5300 feet, below the sand, while Shell Petroleum Corporation's Griffin 1 was near 6000 feet without success. H. D. & H. Inc.'s Wright 1, south offset to the discovery oil well, as ready to abandon at 5980 feet, apparently missing all chances of making a producer. Seaboard Oil Corporation was reworking Wilson 1, discovery oil well of the field, which has gone almost entirely to gas.

In San Patricio County, East White Point's development has expanded to a small lot subdivision, known as the West subdivision of Section 50, and a number of wells are expected to be carried to the 5600-foot zone. These wells are on close spacing, some only 60 feet apart. Plymouth Oil Company found a sand below 7800 feet in E. Brooks 3, at the north end of production, and was going ahead below 8100 feet, apparently directed to 10,000 feet, or possibly the Jackson.

McCampbell field production was moved into the Aransas Pass townsite during the week, several wells offsetting the limits setting casing on the 7100-7200-foot zones. In the meantime, R. B. Bryant has taken over part of Grote and Corgev's drilling obligations in the townsite and has started the first well actually within the corporate limits.

La Rosa field, Refugio County, gained another producing sand with Morgan Gulf Oil Corporation's Rooke 1, flowing gas and distillate through 3/16-inch choke under 1760 pounds working pressure after perforations were made at 5850-55 feet. Another sand, also new for the field, was found at 5709-14 feet. Completion will be effected here, the well showing for an oil producer on drill stem test.

About 1½ miles south of production, Hewitt and Dougherty were preparing to commence an important outpost to the field. It likely will be moving in immediately upon the completion of a present drilling well for the same operators.

West Ranch, Magnolia Petroleum Company's controlled field in Jackson County, was given another west extension when the company cored 25 feet of solid and well saturated oil sand from 5106-31 feet. Casing was landed 10 feet off bottom for completion. The well is one fourth mile west of present production. Rig will be skidded another 1320 feet west for an outpost immediately after the completion of the present well.

McAllen.—Pan American Production Corporation's wildcat in the Mestinas sector of Hidalgo County proved disappointing in the 6500-foot sand, which was recorded after the well had been plugged back from 8123 feet to 6111 feet and sidetracked. The well, Vina 1, also will test a sand at 6691-6721 feet and 7199-7207 feet.

Fohs Oil Company was reworking Sullivan 1, northeast of the Samfordyce field, Hidalgo County, after making too much gas through perforations at 3424-30 feet.

Sweden northeast extension try fails

San Diego.—Testing salt water through perforations at 5865-74 feet, Gravis & Doran's Parr 1, attempted 6000-foot northeast extension to the Sweden field of Duval County has been abandoned. This well, located in a key position, was expected to revive development in this Jackson-Cockfield producing sector.

The eastern portion of Duval County continues to hold much attention with a number of wildcat locations being staked during the week. The outstanding present drilling operation is Luling Oil & Gas Company's Pope Dimmitt 1, Section 16, at the extreme southern portion of the county, reportedly going ahead below 4200 feet.

Magnolia Petroleum Company proved

South Texas Completions

CORPUS CHRISTI DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Calhoun County—		
Humble, Welder 27-A (Heyser)	675	5495
Jackson County—		
Porter, Druschel 1 (Cordelle)	650	2705
Jim Wells County—		
Bryant, Ingram 2 (East Alice)	30	5730
Graham, Bankers Mortgage 1-G (East Alice)	300	5387
Kleberg County—		
Pure, State 1, 155 (Bird Island)	150	7320
Nueces County—		
Corpus Christi, Wardner 8 (Stratton)	150	6466
Heep and Southwest, Smith 1, Herrera Grant, Riverside (wildcat)	*	6501
Killam, Lee 1 (Clara Driscoll)	450	5720
McAlester Fuel, State 1 (Luby)	400	5044
Seaboard, Chapman 8, section 47 (wildcat)	*	6518
Sultex, Page 2 (Saxet)	¶10	4852
Refugio County—		
Coronado, Michna 5 (LaRosa)	500	6356
Rooke 9	500	6352
Rooke 12	500	5916
Quintana, Willams 5 (Tomoconnor)	1250	5928
San Patricio County—		
Culton, McCampbell 1, Peter Mahoney sur (wildcat)	*	7270
Grote & Corgey, McCampbell-Porterfield (McCampbell)	*	7180
Plymouth, Bailey A-1 (E. White Point)	600	5666
Shell, Kirk 4 (E. White Point)	600	5637
Victoria County—		
Barnsdall, Keeran 3 (Keeran)	450	7005
McFaddin 21 (McFaddin)	550	4400
Magnolia, Lander 13 (Heyser)	500	5486

LAREDO DISTRICT

Duval County—		
Argo, Fee-Roden 5 (Hoffman)	190	2844
Continental, Collings 6 (Hoffman)	350	2838
Dutex, State 5 (Piedra Lumbre)	220	2088
Hamill and Smith, Weil 1, sur 567 (wildcat)	*	3504
Humble, White 14-B (Lundell)	155	1518
Longhorn & Realitos, Miller 4 (Longhorn)	550	4902
Magnolia, Duval 3 (189) (Cedro Hill)	35	1453
Duval 21 (203) (Piedra Lumbre)	200	2047
Miller & Sons, Fee 3 (Longhorn)	750	4960
Texas-Inland, Nueces 1, Sec. 175 (wildcat)	*	1217
Jim Hogg County—		
Humble, Bass 7 (Kelsey)	300	4734
Live Oak County—		
Simmons, McGriff B-7 (Oakville)	125	2838
Reagan B-4	80	2837
McMullen County—		
Ezzell, Fee 31 (Ezzell)	68	1533
Fee 32	*	1516
Starr County—		
Morton, Valdez 1 (South Ricaby wildcat)	*	2014
Transwestern, Cameron 1, Section 228 (wildcat)	*	lcn.
Zimmerman, Tijerena 1 (2nd hole) sec 299, (wildcat)	*	825
Webb County—		
James M. Anderson, Martin 1 (Oilton wildcat)	*	2256
Interstate Minerals, Lopez 1 sur 309 (wildcat)	*	2250
Zapata County—		
Buffalo, Hunnant A-6 (Mirando Valley)	91	1935
Nordan & Morris, Haynes 10-C (Comitas)	68	1245

SAN ANTONIO DISTRICT

Bastrop County—		
Coffield, McAden 1, Navarro sur (wildcat)	*	2170
Bexar County—		
W. M. Allison, Miller 2(North Somerset)	4	1386
Blanco County—		
McCart, Lester 1, sur 161 (wildcat)	†	90
Nixon, Crist 2, sur 94 (wildcat)	*	657
Caldwell County—		
Adams, Teas 1, Branyon (wildcat)	*	2372
Camp, Wright 1 (Salt Flats)	40	2676
Elimag, Dickinson 4 (Salt Flats)	200	2720
Martel, Carter 4 (Salt Flats)	88	2671
Comal County—		
Killam, Gruene, sur No. 34 (wildcat)	*	1745
Guadalupe County—		
Cities Service, Dowdy 6 (Darst Creek)	110	2619
Diamond Half, Jacobs 1, Fuqua League (wildcat)	*	2969
Hamil & Hamil, Zuehl 2 (New Berlin wildcat)	*	1940
Landrum, Walker 1, Cortinas & White sur (wildcat)	*	791
Marjo, Schuenemann 5 (Zoboroski)	26	2317
Medina County—		
Gilcrease, Lilly 1, sur 1359 (wildcat)	*	3219
Milam County—		
Jones, Coffield 5 (Minerva Rockdale)	*	604
Travis County—		
Grimes, Lundgreen (Kimbro)	5	650

*Failures; †Junked; ¶Million cu. ft. gas.

a fault of approximately 300 feet of displacement in the Tesoro field of Duval County when it completed Spence 2 as a gasser through perforations at 4840-48 feet. The offset well found the sand at approximately 5100 feet. These wells are productive in the Pettus sand.

In the east central portion of Jim Hogg County, Humble Oil & Refining Company's Mestina Oil & Gas Company 1, was running a drill-stem test at 5455 feet. It encountered several shows higher in the hole, but none indicated commercial production.

Lee County test gets trace of oil in pumping water

San Antonio.—Continued attempts are being made to open a new Edwards limestone oil field on the Tanglewood fault in Lee County. The most recent test is Fred Pederson's Oscar Brown 1, D. Hudson Survey, which is at 6424 feet in the limestone topped at 6394 feet. The well is on pump, making about 100 barrels of fluid per day, 3 to 4 percent oil and the remainder salt water. It is expected that another test will be drilled in the general vicinity.

The Steve Panos operation on the Sanders tract, in the Von Roeder Survey, near McDade, was reported testing just below 4600 feet, apparently in the Edwards limestone.

Wilcox Oil & Gas Company's wildcat on the Gilliam tract, east of the discovery well of the Batesville pool, Zavala County, is ready to go ahead below 4113 feet after setting casing to cut off water. It lost returns at approximately this level in a crevice.

Texas Gulf Coast

New Galveston County field opened on Bolivar Peninsular. New and deeper oil sand cored in test at League City.

Houston.—Sun Oil Company's Cade Estate 2, Bolivar Peninsula, Galveston County, came in last week flowing oil from Miocene sands. Casing was perforated from 7474 to 7478 feet and the first 12½ hours the flow was 146 barrels through a 3/16-inch choke with tubing pressure 2150 pounds and casing pressure of 400 pounds. The first 24 hours it made 307 barrels of 34-gravity oil through 11/64-inch choke. The hole was drilled to 8009 feet and casing set on bottom. This is the fourth test drilled on the block.

Northwest of production at Satsuma, Harris County, H. E. Williams & Gillespie's Behne 1 flowed 380 barrels of 39.9-gravity oil daily last week through a ¼-inch choke. Tubing pressure was 550 pounds and casing pressure 750 pounds. It is in a new sand. Gas/oil ratio was 850 to 1.

Northeast of production at Fairbanks, Harris County, Union Producing Company was preparing to make a test on Murphy 1, T. M. Dorsett Survey. The hole was drilled to 7237 feet in salt water sand, topped at 7235 feet. A drill-stem test at 7210 to 7221 feet showed 14 stands and one double of salt water. A test the past week from 7018 to 7030 feet showed 11 thribbles of oil and two thribbles of mud and no salt water. Casing was perforated at the end of the week with 40 shots from 7020 to 7030 feet. Northeast of the above well, Kirby Petroleum Company will make another test on Daniel 1, S. S. Reynolds Survey. A test the past week from 7002 to 7022 feet showed gas with a tubing pressure of 2200 pounds and a casing pressure of 600 pounds. The well has been killed; originally it was completed at 7203 to 7211 making gas.

In the Algoa area, Brazoria County, Wynn Crosby's Wilson 1, A. G. Reynolds Survey, was drilling at 7900 feet last week in shale and is being watched with much interest, being reported as running high on structure.

Shell Petroleum Corporation's Doucette 1 at Ace, P. A. Sublett Survey, Polk County, was coring in shale at 7923 feet. This is the second well at Ace to encounter the Wilcox formation. Little information has been given out. One report is that it missed the Wilcox oil sand and a drill-stem test at 7823 to 7885 feet recovered salt water. It is further reported that Shell Petroleum Corporation has purchased the holdings of Peyton Brothers at Ace. This could not be confirmed.

New Sand at League City

Phillips Petroleum Company evidently has discovered a new sand at League

Texas Gulf Coast Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Anahuac—		
Gulf, Syphrett 5	695	7158
Blue Ridge—		
G. J. Lee & Son, Lusher 2	109	3277
Cheek—		
Geo. H. Echols, Beaumont Launch Club 1	*	7750
Dickinson—		
Mortex Oil Co., Lowber 1	532	8888
Fairbanks—		
E. M. Hailey, Brown 2	132	6840
Union Prod. Co., Whithead, Rash et al 3	135	6856
Friendswood—		
Humble, West Fee B-17	424	6040
Hardin—		
Shell, West B-2	459	7633
Manvel—		
Texas Co., Belcher A-20	¶2	6200
Orange—		
C. L. Brown, Chesson 3-B	110	5596
Pickett Ridge—		
Gilcrease Oil Co., Kubela 3	64	4718
Port Neches—		
Texas Co., Kuhn 13	287	5980
Satsuma—		
H. E. Williams & Gillespie, Behne 1	380	6864
Seabreeze—		
Sun Oil Co., Barrow 2	175	8480
Segno—		
Gulf, Quinn B-6	*	5281
Regan 6	612	8070
Spindletop—		
Stanolind, McFaddin 152	67	3305
Thompsons—		
Gulf, Meyers 17-X	81	3565
Tomball—		
Humble, Doege 4	288	5567
West Columbia—		
Texas Co., Abrams 31	432	5613
Withers—		
Smith & McDaniels, Baker 1	104	5548
Stovall-Broussard 1	82	5548
Colorado—		
Mills Bennett Prod. Co., Truchard 1, e of Mentz, Corbit sur.	*	7900
Galveston County—		
Sun, Cade 2, Caplen area, S. F. Hughes sur	307	7478

*Failures; †Junked; ¶Million cu. ft. gas.

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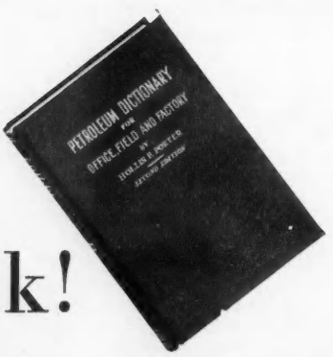

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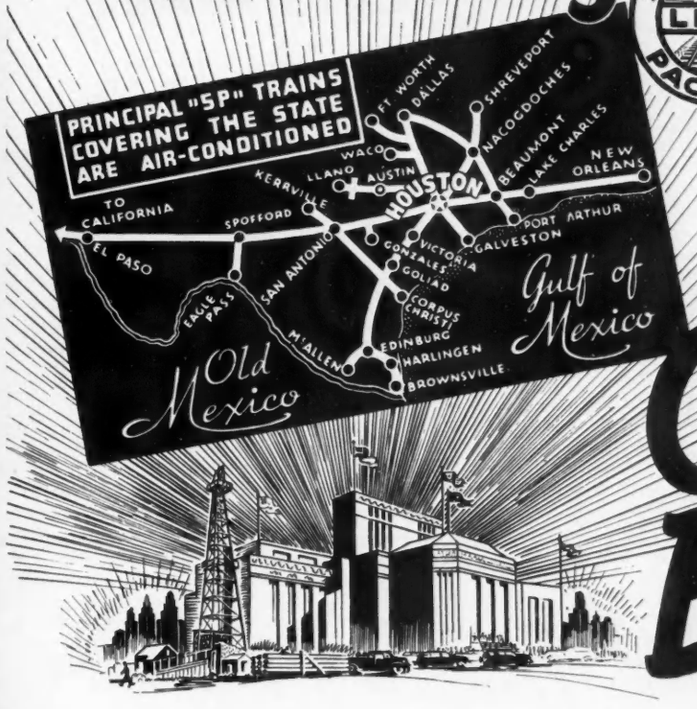

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OIL BURNING LOCOMOTIVES

City, Galveston County, in Stewart Title 1, which was coring in sand showing oil at 10,322 feet at the end of the week. The sand was topped at 10,313 feet. This is one of the deepest oil sands yet cored in the field. The well also has cored oil sands at intervals from 9000 feet on down. Northeast of production the company's Patton 1 flowed salt water after it was jetted with gas. Flow was for one hour, making a half barrel of oil and 30 barrels of salt water. Tubing is being pulled. The company has killed Ott 1 and will perforate higher. It was tested at 9234 to 9260 feet and flowed 15 barrels per hour, 90 percent oil and 10 percent salt water, through 3/64-inch choke. Tubing pressure was 700 pounds and casing pressure 1300 pounds. Midstates Petroleum Company's Stewart A-2 was drilling in shale at 10,168 feet after coring salt water sands at 10,036 to 10,094 feet. Oil sands were cored from 9012 to 9027 feet.

Four miles southwest of Palacios at Buttermilk Slough, Matagorda County, Sun Oil Company will make a production test on Cavallin 1, J. Duncan Survey. After drilling to 9582 feet a string of 7-inch casing was set to test gas and distillate sands at 9306 to 9318 feet.

Hebert & Smith are preparing to make location for a wildcat two miles east of China. It will be in the center of the north 20 acres of the S. Turner 100-acre tract in the J. Gerish, Jr., Survey, Jefferson County. The contract is being let for a 7500-foot test to Geo. H. Echols. The operators have a 3000-acre block and spreads are being sold for $30 per acre bottom hole money. The prospect has been shot and core drilled by Sun Oil Company. No wildcats have been drilled in the area and the present test will be watched with much interest. The principal lease holders are Hebert & Smith, Sun Oil Company, Tide Water Associated Oil Company, Superior Oil Company and Marrs McLean. Other companies are taking large spreads.

Humble Oil & Refining Company has two wells at Cheek, Jefferson County, at completion stages. Jefferson Land Company 3, C. Hildebrandt Survey, was being tested in sand showing oil from 7701 to 7723 feet. Five and one-half inch casing was set at 7722 feet. Pitre 1 logged oil sand at 7700 to 7723 feet and 5½-inch casing was set on bottom.

East offset to production at Cheek, Geo. H. Echols' Beaumont Launch Club 1, was abandoned at 7750 feet in salt water sand, topped at 7727 feet. A gas sand was cored at 7727 feet.

South Louisiana Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Charenton—		
Pan American, Robichaux 6	373	2416
St. Mary Oil Co., LeBlanc 4	38	1131
Choctaw—		
Louisiana Crusader, Schwing 6	195	8609
Dog Lake—		
Texas Co., State 22	¶19	6722
English Bayou—		
Fohs, Green Acres 1	*	5510
Frost 1	¶1	5227
Garden Island—		
Texas Co., State 31	129	5718
Jennings—		
Glassel & Glassel, McFarlain 6	485	7527
Golden Meadows—		
Texas Co., State Catfish Lake 1	* 10,281	
South Houma—		
Shell, Peters 2	* 11,000	
Sulphur—		
Union Sulphur, Fee 840 (wo)	*	4140
Valentine—		
Wm. Helis, Valentine Sugars 3 (wo)	130	7403

*Failures; †Junked; ¶Million cu. ft. gas.

South Louisiana

Second and third wells at Eola nearing producing level. New gas and distillate sand in field of Gulf of Mexico.

Lake Charles.—Eola, Avoyelles Parish, the first Wilcox producing field in South Louisiana, is taking on the appearance of a major oil field. Sid Richardson, discoverer of the field, has two wells, the second and third tests, down to the Wilcox sand. Haas Investment Company 2 cored broken oil sands from 8484 to 8561 feet and was coring at 8655 feet in salt water sand at the end of the week. This well also encountered the Cockfield and Sparta oil sands. Haas Investment Company 3 logged top of broken Wilcox oil sand at 8469 feet and was drilling in the broken oil show at 8516 feet at the end of the week. Pomo Production Company's Sentell 1 topped the Cockfield at 6505 feet and was drilling at 6625 feet at the end of the week. It is running about normal with the discovery well. Sid Richardson has made location for State Bayou Bouef 1, 1635 feet west and 1025 feet south from the northeast corner of Section 7-2s-3e.

Sid Richardson's Haas 2 topped the oil sand 17 feet lower than the discovery well and got salt water sands at 8655 feet. This is the first well in the field to encounter the salt water formation. Haas Investment 3 topped the oil sand 25 feet lower than the discovery well and has not logged any salt water sand. The well that is being closely watched is Pomo Production Company's Sentell 1, a half mile east of the discovery well, which is only 9 feet lower than the discovery well on the Cockfield but was expected to be much lower than this. It indicates that the major portion of the field may lay to the east.

A new gas and distillate sand was discovered at Creole in Gulf of Mexico offshore of Cameron Parish, by Superior Oil Company. State Gulf of Mexico 5 was perforated from 6847 to 6754 feet after the hole was drilled below 7000 feet and 5½-inch casing set at 6951 feet. Two and half-inch tubing was hung at 6733 feet and the well came in flowing distillate, gas, mud and sand through a 6/64-inch choke. Tubing pressure was 2400 pounds.

The second well at South Houma, Shell Petroleum Corporation's Peters 2, Terrebonne Parish, was abandoned last week at 11,000 feet, having failed to find a thick body of oil sand around 10,300 feet. A broken sand was cored at 10,330 to 10,345 feet and a 10-minute drill stem test recovered 15 stands of salt water and a scum of oil.

In the Spanish Lake or St. Gabriel area, Iberville Parish, Shell Petroleum Corporation's Natalbany Lumber Company 1 is shut down at 9000 feet. This "tight" wildcat is reported to have cored oil sands up the hole. The company also is reported to have purchased more acreage and is to drill another test.

Shell Petroleum Corporation's possible discovery well at LaPice, St. James Parish, was drilling at 10,589 feet at the end of the week. Schexneyder 1, Section 38-12s-15e, made a drill-stem test the previous week at 10,376 feet and recovered 17 stands of 32-gravity oil.

At Chalkley, Cameron Parish, Humble Oil & Refining Company's School Land 2 was nearing the 8900-foot producing horizon last week and evidently has missed the 8500-foot producing horizon. The hole is bottomed at 8700 feet and an electrical logging device was run to 8480 feet. The company has made location for Sweet Lake Land & Oil Company 2 a mile northwest of the discovery well. It is 990 feet from the south line and 990 feet from the east line of the W½ SE¼ Section 8-12s-6w.

On the west side at Villa Platte field, Evangeline Parish, Continental Oil Company will work over J. E. Vidrine 1 which was abandoned some time ago at 10,526 feet. It will make a test of the Wilcox sand around 10,000 feet. On the northwest side of the field the company's W. L. Tate 1 was drilling in shale at 9413 feet after missing the Tate sand. The well will probably be carried to the Wilcox. Villa Platte is producing from Sparta.

At Bayou Des Allemands, St. Charles Parish, Amerada Petroleum Corporation has abandoned St. Charles Land Company 3, which topped salt at 9451 feet and is bottomed in the formation at 9453 feet.

At Golden Meadows, Lafourche Parish, The Texas Company's L. L. E. Golden Meadows 1 was drilling in shale at 11,000 feet at the close of the week and is below the producing horizon for the field. The operator's State Catfish Lake was abandoned at 10,200 feet and it appears that the field lies under the town of Golden Meadows. Mortex Oil Company's Falgout Holding Company 1 was drilling in hard sand at 6500 feet. It logged a sand at 2545 to 2564 feet which showed oil but was never tested.

Fohs Oil Company has made location for State Lake Long 8 a quarter mile east of production at Lake Long, Lafourche Parish. It is 1320 feet east of State Lake Long 7 which was completed as a gas and distillate producer.

A quarter mile north of production at North Tepetate, Acadia Parish, Atlantic Refining Company's Klumpp 4 was waiting on cement to set at 8561 feet in broken sand showing oil. Seven-inch casing has been set at 8556 feet.

On the flank of Jefferson Island dome, Iberia Parish, The Texas Company's Jefferson Island 2 was waiting on cement at 8451 feet after setting 7⅝-inch casing. The hole is bottomed at 8455 feet and oil sands were cored at 7772 to 7781 feet and 7821 to 7822 feet. On the flank of New Iberia, Iberia Parish, The Texas Company's Renaudet 1 was drilling in shale and lime

at 8547 feet after setting 9⅝-inch casing at 8339 feet. Oil sand was cored in this well at 8330 to 8338 feet. At Fausse Point, Iberia Parish, The Texas Company's State Lake Fausse Point 5 was running an electrical log at 11,504 feet. At Avery Island, Iberia Parish, the operator's Anse Petit was drilling in shale at 9569 feet. No shows have been reported in the wildcat.

On the south flank of East Hackberry, Cameron Parish, Bennett Production Company's Bickford 1 was coring in broken sand showing oil at 7325 feet at the end of the week. Top of the broken gas sand was logged at 7037 feet. Oil sand was cored at 7113 to 7122 feet.

East Central Louisiana leasing is widespread

Alexandria, La. — Concordia Parish, east central Louisiana, "in the trend" is getting a considerable wildcat play as a result of recent developments at Eola. In the southern end of the parish, Sun Oil Company has leased approximately 8000 acres centering around Section 10-1n-8e, for 10 years and in the same area around Section 15-1n-8e, Magnolia Petroleum Company secured 1500 acres for the same term. In this same general area Gulf Oil Corporation has a 20,000-acre block of leases paid-up, that do not expire until 1945.

In this parish, The Texas Company has secured 5000 acres of 10-year leases of which about half center around Section 34-3n-8e, the rest being scattered farther south. Between the villages of Acme and Bougere, The Texas Company has 35,000 acres under leases that expire in 1943, the holdings being in townships 3 and 4 north, ranges 7 and 8 east.

Paul Benedum has a 15,000-acre block centering around Section 35-5n-8e, where he drilled a 6005-foot dry hole last year, topping the Wilcox at sub-sea depth of 4650 feet.

In Catahoula Parish between Harrisonburg and the Tensas River, Ross Morel of New Roads, Louisiana, leased a block around Section 18-9n-7e, for a Wilcox sand test to spud by May 1. South of White Sulphur, LaSalle Parish, Adams-Louisiana Company leased several hundred acres around Section 1-6n-3e and Section 6-6n-2e. This company drilled a test in Section 12-6n-2e to 2690 feet three years ago, topping the Wilcox at 2664 feet. Standard Oil Company of Louisiana has a geophysical unit working in this area in township 8 north, ranges 1 and 2 east.

Louisiana starts

Shreveport.—Thirty-four drilling permits were issued last week by the Louisiana Conservation Commission of which 15 were in North Louisiana parishes as follows: Caddo, 11; DeSoto, 1; Ouachita, 1; Sabine, 1; and Union, 1. The 20 in South Louisiana were in the following parishes: Acadia, 2; Avoyelles, 1; Beauregard, 2; Calcasieu, 1; Cameron, 1; Evangeline, 3; Iberville, 1; Iberia, 1; Jefferson Davis, 1; LaFourche, 1; Plaquemines, 2; Rapides, 1; St. Mary, 1; and Terrebonne, 1.

Tests in Turkey to launch government program

Turkish government plans for an intensive development campaign have taken definite shape in the announcement of two deep tests to be drilled upon the Hodjali structure in early spring. S. H. Russell, in charge of oil operations for the Turkish state, released this information during a recent visit to Longview, Texas. Russell, once an operator in Texas and Mexican fields, announced the purchase of two heavy American rigs to drill the tests, which are forerunners in a plan fashioned in Istanbul to decrease Turkish dependence upon imported oil.

Russell, who returned to resume his duties March 10, discussed the future of the deep drilling and exploratory program in optimistic tones. Prospects are numerous. Along with the Hodjali dome, which is near the Tigris and 160 miles north of the Iraq pool, the Adana structure ranks high as a potential producer as does the Mardin Siirt region, for which tentative drilling plans have been made. The list of other prospects: Kerbent, Rubai, Kale, and Beshiri structures, is expected to lengthen as exploration progresses.

Bennett hearing

The Texas Railroad Commission has scheduled a hearing on the Bennett field in Yoakum County for March 30, at Austin. The purpose of the hearing is to consider revision of operating rules in the field.

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North Louisiana Fields

Sabine wildcat threatens blowout while preparing to test. Plans being made for deep test in old Bellevue field.

Shreveport.—George Ellis and associates last week were planning to set casing to test Walker 1, NW NW SE 8-4n-12w, Sabine Parish wildcat, south of the Sabine Uplift, after the test recovered 3 feet of sand showing oil from 2120 to 2126 feet. The test threatened to blow out as operator reamed down preparatory to setting casing.

Another wildcat that had shown 135 feet of oil in the Paluxy in a test from 3282 to 3296 feet, however, swabbed salt water along with oil when tested last week. This is Jack Lent and associates' E. L. Whatley 1, SW SE SW 17-10n-10w. Testing continued as an effort to shut off salt water was made.

The Shreveport basal Glen Rose lime field added one oil well last week to bring the total oil producers to 14, but another test showed salt water along with oil and was still being tested after plugging back as the week closed. This operation is W. C. Leisk's T. G. Sinclair 1, NW SE 26-18n-14w, about midway between the older producing part of the field and a recently opened 1¼-mile northeast extension. Total depth is 5567 feet. Two new locations were made during the week in the Shreveport field which also has nine other tests drilling and another rigging.

Most advanced of the other tests in the Shreveport field is Henry Fotiades' Tomlinson 1, Section 35-18n-14w, one location east of production in the southern part of the field, which was testing at 5595 feet.

Some activity still continues in the lenticular Tokio horizon at Vivian, north offshoot of the old shallow Pine Island field, Caddo Parish. Two oil wells and one failure were recorded there last week and two other operations reached the Tokio horizon.

Magnolia Petroleum Company's Roseberry Unit 1, C SE 29-23n-9w, cored last week at 9300 feet in the lower Marine horizon with no additional saturation reported after saturation was logged with showing of gas and distillate from 9165 to 9184 feet and also from 9253 to 9257 feet. With elevation of 337 feet this test is checking 50 feet down structure from the discovery well of the gas-distillate horizon in the lower Marine, Frank Sexton 1, Section 32-23n-9w. There is another gas-distillate well to the south. All three operations are owned by Magnolia Petroleum Company.

H. H. Hay is assembling a block around Section 23-13n-16w, DeSoto Parish, with a drilling obligation to start within a year. This block is north of S. S. Alexander's Stell A-1, NE NE 5-12n-16w, which is being standardized after flowing 25 to 30 barrels of oil daily from the Paluxy at 3045 feet.

Stanolind Oil & Gas Company, which the previous week completed its third oil well from the Bodcaw "E" sand on the southeast flank at Cotton Valley has made location there for three additional lower Marine tests.

Propose Bellevue Deep Test

Premier Investment Company, one of the largest lease owners in the shallow Bellevue field, Bossier Parish, is trying to enlist the aid of other lease owners in that domal area to drill a deep test, proposed location for which is on the company's M. J. Kendrick lease in Section 23-19n-11w. Deepest test at Bellevue was H. I. Morgan's Smith 2, drilled to 6147 feet. The structure is a deep-seated dome and overlying formations are some 2000 feet above their correct place on top of the structure and in the shallow bed a block fault is present. The formations on the flanks are truncated.

Although J. O. Whittington's Grayson 1, Section 30-19n-15w, between the Shreveport and Pine Island fields, Caddo Parish, was abandoned as a dry hole last week at 6042 feet in Travis Peak, Union Producing Company may take over the operation and the acreage, set casing, acidize and test the Pettet (basal Glen Rose) lime where a small gas well was indicated by electrical log.

George W. Zeigen, who has been active in shallow wildcat drilling in northeast Louisiana, and in the shallow Urania field, has forfeited approximately 69,000 acres of Louisiana Central Lumber Company leases which he held for some time and on which he drilled 17 shallow tests.

North Louisiana Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Bossier (Bellevue)—		
Premier Inv. Co., McDade 1, 28-19n-11w	*	2490
Conn 1, 22-19n-11w	*	305
Caddo (Wildcat)—		
J. O. Whittington, Grayson 1, 30-19n-15w	*	6042
Caddo (Vivian)—		
Rhoda Armstrong & Mahon, Henderson 2, 27-22n-16w	30	2505
Burnham Dr. Co., Bell 1, 34-22n-16w	40	2455
Carl Jones, Henderson 1, 27-22n-16w	*	2502
Caddo (Pine Island)—		
Cryer & Davis, Crystal Oil Ref. Co., 1, 25-21n-16w	25	2275
Caddo (Shreveport)—		
Hurricane Pet. Co., Chandler C-1, 35-18n-14w	480	5619
Grant (Urania)—		
J. E. Grandstaff, J. E. Erwin 1, 9-9n-1e	75	1650
K. M. Oil Co., J. L. Holmes 2, 20-9n-1e	*	1616
La Salle (Urania)—		
G. C. Walsenham, Dean 2, 23-9n-1e	*	1645
Red River (Bull Bayou)—		
D. J. Simmons, Richardson 1, 24-13n-11w	10	2543
Sabine (Wildcat)—		
LeGrande & Brown, Tatum 1, 17-8n-13w	10	2340
Union (Monroe)—		
Interstate Nat. Gas Co., Fee 92, 2-20n-3w	¶1¼	2163
Webster (Cotton Valley)—		
Hunt & Stanolind, Coffee-Webster 1, 36-21n-10w	360	8470
Roy Fincher, S. P. D. Coyle 1, 23-21n-10w	200	5804

*Failures; †Junked; ¶Million cu. ft. gas.

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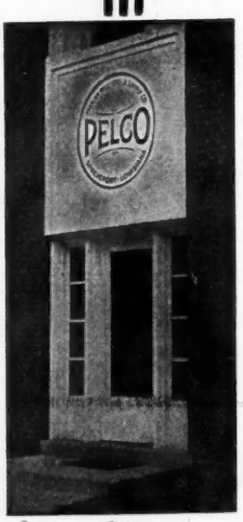

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Magnolia—Houston

Shell Petroleum Corporation has secured geophysical option on several thousand acres of a wildcat block in Claiborne Parish centering around Section 27-20n-7w, held under lease by Frank L. Watson, and is checking the block with a seismograph unit. As Ryan Petroleum Corporation drilled a Glen Rose failure in this area it appears interest is in the deeper possibilities. Phillips Petroleum Company has been adding recently to its holdings in township 22 north, ranges 5 and 6 west, Claiborne Parish.

Arkansas Fields

Three new oil producers added in Magnolia field

El Dorado, Ark.—Three wells were completed last week in the Magnolia (Kerr-Lynn) field which produces from the Permian lime, largest of the three being Atlantic Refining Company's Levi Garrett B-1, Section 24-17-20, flowing 54 barrels of oil per hour through 14/16-inch choke from 7510 feet after perforating casing. This well made the thirteenth oil producer for this district. Two other tests are coring for the Permian saturation.

Another Permian lime wildcat test for Columbia County is in prospect with securing by Atlantic Refining Company of an option on E½ 16-18-22, subject to title approval, with a drilling obligation to start a Smackover (Permian) lime test by June 1.

As Atlantic Refining Company is not a very large lease holder in this area, a block apparently will be unitized before drilling is begun. The company has bought a great deal of royalty in this area.

Normandie Oil Company has bought 88 acres additional leases in Sections 18-17-19 and 25-17-20 at Magnolia, Columbia County, from Milton J. Houston of Shreveport. Devonian Oil Company is buying minerals west of Stephens in township 15, range 20. In the McNeil area Phillips Petroleum Company is adding to its leases in township 16, range 20, where it has a seismograph unit. In the same general area similar crews are working for Standard Oil Company of Louisiana and Tide Water Associated Oil Company. J. G. Strahan is assembling a block in the north part of township 15, range 27, Miller County. In Union County north of Strong and in township 18, range 11 and 12, Stanolind Oil & Gas Company is adding to its holdings. It has a shooting unit near Catesville in township 19, ranges 14 and 15. Amerada Petroleum Corporation has a seismograph at Urbana, township 18, range 13 and Barnsdall Oil Corporation has a similar unit in township 19, range 17. Gulf Refining Company has a gravimeter unit in township 17, range 16, north of Lisbon.

Arkansas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Columbia (Magnolia)—		
Atlantic, Garrett B-1, 24-17-20	1296	7510
Alice Sidney Oil Co., Crisp 1, 23-17-20	480	7525
Southwood Oil Co., Inc., Hutcherson 2, 14-17-20	408	7526

• Failures; † Junked; ¶ Million cu. ft. gas.

Alabama test nearing projected 6000 feet

Mobile, Ala.—H. A. Stebbinger's Mrs. Alyce Robertson 1, NE NE 19-10n-26e, Barbour County, southeast Alabama, drilled ahead last week below 5150 feet after testing brackish water with no showing of oil or gas at 4950 feet. Following setting of 7-inch casing at 4556 feet operators set liner and tubing, washed 4 hours, swabbed 21 hours with no showing, the last few trips of the swab bringing brackish water. Later the tubing was lowered from 4757 to 4878 feet and hole washed 2 hours without show. Tubing and liner were then pulled and drilling resumed. The test was planned originally for 6000 feet.

Columbia Oil & Gas Company has set 10¾-inch casing at 85 feet and is drilling below 750 feet at State School Land 1, SE NE NE 8-2n-29e, Houston County, southeast Alabama.

In the Everglades of Florida, 41 miles west of Maimi, Peninsular Oil & Refining Company's J. W. Cory 1, C NW 6-55s-34e, was shut down at 3256 feet after losing returns for some depth below 3200 feet where bit was in lime. In Levy County, Florida, Florida Oil Discovery Company's Sholtz 2, SW SW NE 9-15s-13e, is shut down at 4472 feet in hard shale.

Donald Clarke and associates staked location for Adams McCaskill 1, located 660 feet north and 150 feet east center lines of Land Lot No. 332 Fourth Land District, Pierce County, Georgia. This test is three miles north of Pan-American Oil Company's Adams McCaskill 1, abandoned last year in granite.

The Wells Work Manufacturing Company is reaming down to bottom of hole at 420 feet to set 30-inch casing with 2000 sacks of cement at this depth on a water well at Albany, Georgia, that may be deepened into a test for oil or gas. In Echols and Clinch counties, Georgia, Renard Oil Company has 92,000 acres leased in 1937 on which it may start activity soon.

Phillips Petroleum Company's seismograph unit in southwest Alabama continues shooting around the Mobile Bay littoral. There is considerable lease and royalty trading in Clarke, Choctaw and Washington counties, all in southwest Alabama. There is also some leasing around the large block in Colbert, Franklin and Lamar counties, northwest Alabama, held by DeSoto Oil & Gas Corporation (J. P. Woodward).

New Mexico Fields

Outpost promises extension of Vacuum field northeast. Lovington half-mile extension test finds formations high.

Hobbs, New Mexico.—The quota of new operations in Lea County returned to a normal level the past week when 10 tests were authorized for 6 areas. The Vacuum field contributed 4 of the total, and the new Lovington pool gained a test on the extreme east edge.

An extension for the southwest portion of the prolific lime area, situated between the South Eunice and Penrose fields, is to be sought by Texas Pacific Coal & Oil Company in starting operations on State 15-A, Lease 2, C NE NW 11-22s-36e. It is a quarter-mile due west of the company's State 14-A, which was reported last week with a natural flow of 400 barrels of oil per hour from lime at 3700-90 feet, with an elevation of 3540 feet. Gulf Oil Corporation has rigged up for State-Leonard 1-C, C SE SW 36-21s-36e.

Expansion of the productive limits of the northeast sector of the Vacuum field was promised by Magnolia Petroleum Company's State 1-P, C SW SE 22-17s-35e, in registering a favorable structural position and oil shows in coring to 4630 feet. Oil saturation in the regular lime horizon was recorded at 4285-4315 feet, 4500-38 feet and 4543-4625 feet, with an elevation of 3944 feet. It is half mile from production, and a slightly greater distance from a recent failure.

Magnolia Petroleum Company's State 1-O, C NW SW 33-17s-35e, situated within the productive limits of the Vacuum field, but ¼-mile from nearest production, flowed 462 barrels natural for completion at 4650 feet. Three oil-saturated zones were logged below 4168 feet. It is on a 40-acre lease that required production in May, and an unusual number of progressive offsets will occur because of the sub-division of acreage in the immediate area. The company also completed State-Bridges 26, C SE SW 26-17s-34e, flowing 90 barrels natural at 4710 feet, then skidded rig one location west to drill State-Bridges 29. Derrick is up for State-Bridges 28, C NW NW 26-17s-34e. The Texas Company has started operations on State 2-T, C SW SE 34-17s-34e, and State 1-X, C NE NE 3-

New Mexico Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Chaves County (Wildcat)—		
Fisher et al, Foster 1, c nw nw 7-15s-26e	•	1281
Eddy County—		
Danciger, Turner 1-B, ne se se 17-17s-31e	27	3530
Lea County (Eunice)—		
Gulf, State-W. A. Ramsey 4, c se se 35-21s-36e	1225	3860
T. P. Coal & Oil Co., State 14-A, c nw ne 11-22s-37e	9600	3790
Lea County (Hardy)—		
Gulf, McCormack 7, c ne se 32-21s-37e	130	3765
Lea County (Maljamar)—		
Maljamar O&G Corp., Wm. Mitchell 1-B, c ne se 20-17s-32e	200	3721
Lea County (Vacuum)—		
Magnolia, State 1-O, c nw sw 33-17s-35e	462	4650
State-Bridges 26, c se sw 26-17s-34e	90	4710
Standard (Texas), State 3-32-3, c ne nw 32-17s-35e	720	4635
Rio Arriba County (Wildcat)—		
Oil City Pet. Co., Wirt-Sanchez 2, 12-31n-2e	•	478
San Juan County—		
Continental, Rattlesnake 87, 2-29n-19w	22	766

• Failures; † Junked; ¶ Million cu. ft. gas.

18s-34e, being offsets to the most southwesterly producer in the field.

The liquidation of back allowable due properties in the Hobbs and Monument fields held the Lea County areas to a shortage of 52,530 barrels during January, according to the latest survey of the over-and-short report. The above areas exceeded January production allowable by 35,572 barrels and 25,721 barrels, respectively. Fourteen other fields and pools were credited with a shortage of 115,342 barrels during January, when the total allowable for Lea County, except the Maljamar field, amounted to 2,831,291 barrels. The Vacuum field, which is subject to pipe line and purchasers' proration, registered a deficit of 23,484 barrels and the Eunice field failed to produce its allowable by 25,667 barrels. The Penrose field was short 16,724 barrels for the month. Inability of the wells to produce their allotted share of the market outlet is responsible for a substantial portion of the deficit.

Lovington Extension Higher

Stanolind Oil & Gas Company's State 2, C SE NW 1-17s-36e, is the next scheduled completion for the Lovington pool, having drilled plugs from 7-inch pipe at 4536 feet to proceed to the 4700-4800-foot oil pay. This well is a half mile north of an oil producer and is structurally high, having logged base of the salt at 2830 feet and top of Yates at 3010 feet, with an elevation of 3840 feet. Repollo Oil Company's State 2-A, Lease 182, SW NE SW 31-16s-37e, one location north of the most easterly oil well in the pool, has cemented surface pipe.

P. B. English et al's Miller 1, C NE SE 18-19s-32e, western Lea County wildcat and 11 miles south of the Maljamar field, logged base of salt series at 2365 feet, with an elevation of 3591 feet, and was drilling at 2610 feet. A south extension for the Maljamar area is to be sought by Carter Drilling Company in starting operations on Simon 1, C NE NE 29-17s-32e. Repollo Oil Company's State 2, Lease 197, SE NE SE 6-17s-34e, half-mile north of its small producer, was drilling at 4965 feet, having missed the oil and gas horizon. It will be carried to the water level.

The Hardy sandy-lime area in eastern Lea County gained two tests with the starting of operations on Dangladе-Clower et al's Corrigan 1, near C NE SE 33-21s-37e, and John G. Menke et al's Alexander-The Texas Company 2, center lot 11, 5-21s-37e. Magnolia Petroleum Company's Rosa Marshall 1, east extension test, was drilling plugs from 7-inch pipe at 3620 feet.

Franklin Petroleum Company's Ballard 1, NE NE SE 1-18s-29e, approximate west offset to the recently completed discovery well in the Loco Hills pool, Eddy County, was flowing by heads while drilling at 2820 feet. Oil pay was logged at 2780-2808 feet. Top of lime was called at 2610 feet, with an elevation of 3536 feet. In Chaves County Hightower et al's Billingslea 1, C SW NE 28-11s-30e, logged odor and stain of oil in lime at 3085-3188 feet, and was drilling at 3225 feet, with an elevation of 3966 feet.

Shell Petroleum Corporation's Harwood 1, Roosevelt County wildcat on the Milnesand geophysical prospect, was drilling broken anhydrite, red rock and lime at 6885 feet.

California Fields

Start work on deep test east of Seal Beach field

Los Angeles—Union Oil Company has started work on what probably will be a deep test, Nieto 1, NEc 12-5-12, a mile east of the old portion of the Seal Beach field and in Orange County. The company has lease on 1500 acres and the location was made after extensive geophysical investigation. This test is only a short distance from the city limits of Seal Beach where voters only a week ago voted against permitting drilling for oil. Recent drilling in the immediate area included a hole to 7220 feet by Shell Oil Company and one to 5800 feet by Tide Water Associated Oil Company, both finding nothing of interest.

Another test following geophysical surveying is the announced intention of Richfield Oil Corporation to drill on Montana Land Company property in the North Long Beach area. Location of the test has not been made. It is expected that this area will require at least 8000 feet of drilling.

Ridge Oil Company's No. 1, Section 3-2-12, on the Montebello golf course, west of West Montebello field, has penetrated a formation carrying a small amount of oil sand around 3700 feet. The test continues drilling and reports markers 400 to 500 feet higher than in the shallow producers in the old field.

Additional drilling is expected to be stimulated by a recent completion in the Edison field, Kern County. Francis O'Reilly's Seale 6-26, Section 5-30-29, produced 100 barrels initially from 4156 feet, making it the best well in the field for a number of months.

Continental Oil Company's KCL A-4, ⅛-mile south of its discovery well in the Wasco field, Kern County, developed an initial potential of 9200 barrels of 36.8-gravity oil per day along with 750,000 cubic feet of gas from 13,135 feet. Flow is through ⅞-inch choke with a very small cut which is expected to clean up in a day or two. Tubing pressure is 430 pounds and 900 pounds casing. Two and one-half-inch tubing was landed at 10,115 feet, 13⅜-inch at 501 feet, 8⅝-inch at 5490 feet, and 7-inch to 12,020 feet. Top of the oil sand was around 13,106 feet. Situated in Section 8-27-24, this new producer will probably be offset by another deep test early this year, although the company said nothing definite was decided for the present. It is located midway between the company's discovery well and Standard Oil Company's KCL 8-B-4, to the south, the latter reportedly picking up top of the oil sand late last week. Standard Oil Company's Mushrush 2, is coring below 13,100 feet in shale with upper stringers of oil sand expected this week.

The City of Long Beach awarded another contract for the development of city owned oil land in the harbor area, the last of a block of undeveloped land embracing 269 acres on both sides of the harbor channel to the Long Beach Oil Development Company on a cost-plus and royalty basis. Long Beach Oil Development, comprising Standard Oil Company, Signal Oil & Gas Company, Hancock Oil Company, Apex Petroleum Company, Termo Corporation and The A. N. Macrate interests, offered the city 65.99 percent royalty of all oil and gas recovered, but on the basis of the first 14.45 percent of the oil and gas going to the companies which constitute the successful bidder. The 269 acres are embraced in four parcels, a portion of this land lying on the east side of the harbor channel, the majority of it being on Terminal Island. It is said to be the same block the Ramsey interests recently made a bid for, offering 61 percent royalty and against which a suit was directed by Ramsey a few days ago.

Robert Lytle's No. 22-18F, is expected to be the next new producer for the East Coalinga Eocene (Coalinga Nose) field. Casing has been run and cemented at 6925 feet. The operator's No. 35-7F is expected to stop drilling this week preparatory to completion below 7250 feet.

The Santa Maria field, Santa Barbara County, recorded two completions last week, one by George F. Getty, Inc., who brought in Vicente 8 for an unestimated amount of oil at 4982 feet, and another by E. H. Moore, who completed Union Sugar 11 for 400 barrels daily at 4616 feet.

California Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Los Angeles County (Athens-Rosecrans)—		
Bankline, Kirby 2	775	7701
Universal Cons., Trust 10	400	7757
Los Angeles County (Montebello)—		
Herley-Kelly Oil Operations, Burke Comm. 2	900	7235
Los Angeles County (Torrance)—		
W. P. Andrews, Kirk 9	120	5095
C. C. M. O., Torrance 51	108	5028
Hathaway Oil Co., Meyers 1	1000	5165
Woolner Oil Co., Fee 7	oil	5140
Los Angeles County (Wilmington)—		
General, Harbor Comm. (LB) 22	714	4100
Harbor Comm. (LB) 34	976	4040
Patten 3	43	3618
A. Haines, No. (LB) 1	oil	3047
Richfield, Pacific Dock (LB) 22	192	3000
Kern County (Trico Area)—		
Standard, M&L 8-1, sec 3-25-23	¶7520	2463
Kern County (Belridge)—		
Belridge, No. 26A, sec 35-27-20	290	8750
Kern County (Midway-Sunset)—		
Otis Hoyt, Maricopa 10, se nw 7-11-23	100	3078
Kern County (Rio Bravo)—		
General, Van Ness 3, 330 ft s and 1800 ft w of nec sec 2-29-25	1918	11,543
Kern County (Union Avenue Area)—		
Richfield, Union Ave. 1, sec 6-30-28	*	10,427
Ventura County (San Miguelito-Padre Canyon)—		
C. C. M. O. No. A-6, sec 15-3-24	125	5426

* Failures; † Junked; ¶ Million cu. ft. gas.

Want more allowable for Hitchcock field

An allowable of 2500 barrels daily for the Hitchcock field, Galveston County, was requested last week at a hearing before the Texas Railroad Commission. The field is permitted to produce 686 barrels daily now, after shut-down deductions are made.

The additional allowances would go to the Pan American Refinery, which can buy at this rate until June 24, 1943. Maco Stewart, principal operator in the field, intimated that this oil would probably be substituted for some oil which Pan American is now processing from Louisiana.

Rocky Mountain States

Deep test scheduled to drill in Ant Hills, Wyoming area

Casper, Wyo.—Drilling is scheduled to start immediately on Continental Oil Company's deep test well in the Ant Hills field, to the northwest of the Lance Creek area, in Niobrara County. The company is preparing to deepen Delahoyde 1, C NE NE NE 25-37n-63w, discovery well for the field, from present plugged depth at around 3955 feet in the Dakota formation. Hole is to be carried ahead to test the producing possibilities of the Sundance and Minnelusa formations.

Drilled in 1928 by Buck Creek Oil Company, Delahoyde 1 well encountered commercial oil shows in the Dakota horizon logged at 3945-55 feet from which point it swabbed 250 barrels of 35-gravity crude. Hole later deepened to 4113 feet where water was encountered and plugged back to the upper formations for completion. After producing some 954 barrels of oil during April, 1928, the well has been shut in and not produced commercially.

Recent developments in the Sundance and lower formations in the Lance Creek field, 14 miles to the southwest, indicate possible good production in these lower horizons at the Ant Hills location. The Ant Hills structure, as mapped on the Pierre shale, is a northwest-southeast trending anticline on the west side of the Old Woman Creek or Cow Gulch uplift. There is no well-defined surface structure on the area.

A second test drilled on the Ant Hills structure, in 1928, Peterson 1, NW NE NW 30-37n-62w, was abandoned at 4235 feet after logging some oil shows at 4080-90 and 4100-4105 feet. Some shows were also encountered in the top of the Dakota (?) at around 3900 feet.

A near completion in the Basal Sundance sand of the Lance Creek field proper is Ohio Oil Company's Agnes Rohlff 5, NW NE SW 32-36n-65w, which is swabbing and flowing 190 barrels per day from the formation at 3843-3920 feet. Operators plan to acidize the well before completing. Seven-inch production casing has been cemented at 3846 feet. The company's Agnes Rohlff 3, NE NE 32-36n-65w, an old Sundance producer in the Lance Creek field which is deepening to the Leo horizon, is making hole below 4181 feet in the red beds.

Unconfirmed reports from the Big Hollow field, in Albany County, southern Wyoming, indicate that G. R. McConnell and J. L. Gaylord, operators, have completed their second commercial well in the northern pool of the field. Well, operators' Fuller-Union Pacific 1, NW NE NW 7-15n-75w, bottoms at around 900 feet in the Muddy sands topped at 868 feet.

Mountain States Completion

WYOMING

Company, Well and Location	Init. Prod. Bbls.	Depth
Niobrara County (Lance Creek)—		
Ohio, Leo 1 OPC-7, nwc se 35-36n-65w	190	5673

*Failures; †Junked; ¶Million cu. ft. gas.

Fishing job is holding up completion on Sinclair-Wyoming Oil Company's Mahoney-Unit 2-A, C SW NE 34-26n-88w, deep Tensleep well in the Mahoney Dome field, Carbon County, southern Wyoming. Well bottoms at 4328 feet in Tensleep saturation where operators twisted off bit. The company's Lost Soldier 82, NE SW SW 11-26n-90w, Sundance well in the Lost Soldier field, Sweetwater County, southwestern Wyoming, is waiting on cement to set around 5½-inch production casing cemented in the top of the formation at 2213 feet. Total depth is at 2214 feet. Lost Soldier 83, NW NE NE 10-26n-90w, is rigging up portable rotary equipment to drill to the Sundance formations.

West seeks commission "blessing" on batch of crude

West Production Company asked for permanent clearance of 14,071 barrels of crude at a hearing before the Texas Railroad Commission last week. The oil was produced from the company's wells in the Clear Lake field, Harris County, during the course of a series of experimental tests on two wells. Unusual gas pressure and sand conditions in these wells made the tests necessary according to R. B. Newcomb, Jr., petroleum engineer for the company.

The operators desired to clear the oil rather than charge it back against future allowables, as is done with test oil in some instances. Humble Pipe Line Company indicated that it was willing to buy the oil if the commission approved.

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GARLOCK

Michigan Fields

New pool and extension indicated in Van Buren

Mt. Pleasant, Mich.—Another shallow pool and a half mile west extension of the Bloomingdale pool were indicated in Van Buren County last week. Equally interesting and expected to be of major importance were several natural gas strikes which indicate two new gas fields for the state.

C. C. Goff's Miller 1, Section 24-1s-14w, Van Buren County, three-quarters of a mile southeast of the Mill Lake pool (but separated by dry holes and also lower on the lime formation), developed production of 50 barrels per hour with acid treatment at 1355 feet. Traverse was logged at 1297 feet with pay at 1352 feet. The well was rated for an 800-barrel potential.

Goff's strike is only a half mile north of the village of Gobles and already has created a furor of lot-leasing excitement. Two locations on lots were staked this week. Gobles is three miles southeast of the Bloomingdale townsite field.

Grimes & Son's Fox 1, NE SE SW 7-1s-14w, Bloomingdale township, a half mile west of developed production in the Bloomingdale pool, showed 450 feet of oil natural in Traverse at 1224 feet. Operators planned to acidize.

Three wells started for a Traverse oil horizon objective, 1850-1900 feet, in the Walker pool, Kent County, three miles west of Grand Rapids, developed gas in Berea sand at 1100-1200 feet this week, ranging from 3 to 8 million feet.

At the same time in the Wise pool, Isabella County, where the 3700-foot Dundee is the objective, a second well a mile north of the first, developed about 3 million feet of gas at 1155 in Michigan Stray to indicate a commercial gas horizon.

Michigan Devonian Petroleum Company is junking DeKock 1, Section 22-5n-13w, Ottawa County wildcat, at 1825 feet after drilling the Traverse lime dry. It was the first test in a big block which was seismographed as favorable last fall.

Verona Crude Oil Company will junk Fruin 1 wildcat, Section 29-1s-7w, Calhoun County, at 2915 feet. The test topped Niagara lime at 2790 feet and had an oil show at 2847 feet.

Michigan Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Allegan County—		
Bell-Marks, Inc., Klomparens 1, sw nw nw 23-3n-12w	115	1636
Fortney-Cook, Hoeve 2, ne sw nw 27-4n-14w	360	1469
Socony Vacuum, Weber 1, sw ne nw 11-4n-13w	900	1594
Bredwig 1, se se sw 15-4n-13w	350	1593
Arenac County—		
W. J. Soverign, Milne 1, se ne nw 25-19n-3e	5	2984
Calhoun County—		
Verona Crude, Fruin 1, ne sw ne 29-1s-7w	*	2915
Clare County—		
Pure, Switzer A3, c s ne sw 27-19n-6w	2500	3908
Kent County—		
A. M. Henry, Slykhouse 1, ne sw se 32-7n-12w	65	1850
Wolverine Gas Corp., Huntly 1, ne sw se 32-7n-12w	¶3	1126
Montcalm County—		
L. T. Barber, Matheron 1, ne sw nw 23-12n-6w	¶8	1315
Ottawa County—		
Michigan Devonian, DeKock 1, se ne se 22-5n-13w	*	1825
Van Buren County—		
Rowe & Kernodles, Decker 2, ne se se 7-1s-14w	400	1214
Marshall Bauman, Rogers 2, ne sw sw 8-1s-14w	450	1223
Rogers 3, se sw sw 8-1s-14w	800	1216
Wiser Oil Co., Boyers 8, nw ne nw 17-1s-14w	500	1213
R. T. & E. Clinkenbeard 2, ne nw nw 17-1s-14w	970	1199
C. C. Goff, Loveless 1, sw ne ne 23-1s-14w	*	1315
Miller 1, nw nw ne 24-1s-14w	800	1355
W. S. Westbrook, Strom 1, se ne ne 11-1s-15w	165	1179
Walter Bochenek, Ribicki 1, ne ne sw 3-2s-17w	*	1148
R. A. Wright, Young 1, nw sw nw 16-4s-15w	*	973

* Failures; † Junked; ¶ Million cu. ft. gas.

Crude to stills down 18,425,000 barrels in 1938

Crude runs to stills in 1938 totaled 1,165,015,000 barrels, a decline of 18,425,000 barrels from the record total of 1937, it was reported by the Bureau of Mines February 13.

Runs to stills in December totaled 97,964,000 barrels, a daily average of 3,160,000 barrels, failing to move all the 99,416,000 barrels of crude received, with the result that, after allowing for 30,000 barrels in fuel and losses, stocks increased from 50,129,000 barrels on December 1 to 51,551,000 barrels at the close of the year, the bureau announced.

Imports of foreign crude increased during the month to 2,860,000 barrels, the daily average of 92,000 barrels being 13,000 barrels above the November figure. Total imports of crude for the year were 26,412,000 barrels, of which 3,651,000 barrels was entered in bond.

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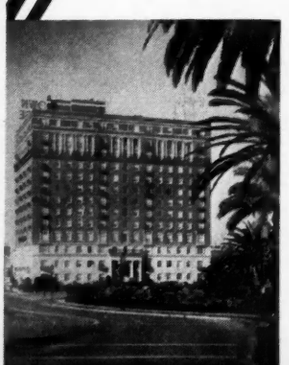

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WILDCAT REPORT
New Starts and Completions

STATE	WILDCATS STARTED		WILDCAT TESTS COMPLETED							
			Total		Oil		Gas		Dry	
	This Week	This Year	This Week	This Year	This Week	This Year	This Week	This Year	This Week	This Year
Alabama	...	1	...	1	...	...	...	...	...	1
Arkansas	...	6	...	5	...	...	...	...	...	5
California	4	55	1	23	...	8	...	...	1	15
Colorado	...	...	...	1	...	...	...	...	1	1
Georgia	1	...	...	...	...	...	...	...	...	...
Illinois	9	94	5	45	...	3	...	...	5	42
Indiana	...	7	...	1	...	...	...	...	...	1
Kansas	6	35	2	33	...	12	...	...	2	21
Kentucky	...	2	...	3	...	2	...	...	...	1
Louisiana	6	29	2	22	1	5	...	...	1	17
North Louisiana	2	11	2	8	1	2	...	...	1	6
South Louisiana	4	18	...	14	...	3	...	...	...	11
Michigan	4	...	5	...	1	...	...	...	4	...
Mississippi	...	1	...	1	...	...	...	...	...	1
Missouri	...	1	...	...	...	...	...	...	...	...
Montana	...	1	...	...	...	...	...	...	...	...
New Mexico	...	7	2	5	...	2	...	...	2	3
New York	...	...	...	2	...	...	...	1	...	1
Oklahoma	6	39	2	33	1	5	...	2	1	26
Ohio	...	...	...	3	...	1	...	...	...	2
South Dakota	...	1	...	...	...	...	...	...	...	...
Texas	13	188	22	204	3	22	...	1	19	181
East Texas	4	24	1	11	...	...	...	...	1	11
North Texas	7	19	4	51	2	13	...	1	2	37
Gulf Coast	...	24	2	17	1	2	...	...	1	15
Panhandle	...	2	...	1	...	...	...	...	...	1
South Texas	...	...	12	91	...	6	...	...	12	85
West Texas	2	42	3	33	...	1	...	...	3	32
Wyoming	1	2	...	1	...	...	...	...	...	1
Total U. S.	50	509	41	443	6	67	...	4	35	372

CALIFORNIA

FIRST REPORTS

Orange County—Union Oil Co., Nieto 1, 330 ft s and 330 ft w nec 12-5-12, lcn.

Kern County—Honolulu's Michelssen 63, 993 ft n and 990 ft w of e¼ c sec 14-28-20, elev 709 ft, rur portable. Tide Water's Cont.-K.C.L. E-35-7, 2310 ft n and 1650 ft e sec 7-30-26, lcn.

Fresno County—Seth Turner's No. 1, 200 ft s and 1000 ft w nec se 4-14-19, lcn. Shell's KCL 1A-8-32, 335 ft n and 321 ft e swc 32-11-22, lcn.

COMPLETIONS

Kern County—Richfield's Union Ave. 1, 990 ft s and 330 ft w of c of sec 6-30-28, abnd, td 10,427 ft, top Santa Margarita 5190 ft, top Wicker sand, 6725 ft, barren, top barren Vedder 9665 ft, poor oil sand 4410-40 ft, formation test recovered gassy mud, formation test 5197-5221 ft, recovered water and a trace of oil, formation test 5690-5715 ft, recovered mud, no oil or gas.

GEORGIA

FIRST REPORTS

Pierce County—Donald Clark et al's Adams-McCaskill 1, located 660 ft n and 150 ft e c Land Lot No. 332, Fourth Land District (unsectionized), lcn.

ILLINOIS

FIRST REPORTS

Clay County—Minerva Oil Co.'s J. Smith 1, sw sw nw 23-5n-5e, Larkinsburg tnp, dr.

Effingham County—Gordon Hauck's Morhead 1, nw sw sw 18-8n-4e, Moccasin tnp, dr. Kingwood Oil Co. and Romine's Koester 1, ne se sw 18-8n-6e, dk.

Gallatin County—Bailey & Lucas's Dr. H. Logan 1, se ne ne 21-8s-8e, North Fork tnp, dr. Dillon et al's Carol Frohoch 1, sw sw ne 10-10s-8e, Eagle Creek tnp, moving in materials. Delta Drilling Co.'s Stenson 1, se se sw 9-9s-9e, Gold Hill tnp, lcn.

Perry County—E. J. Shaefer's F. Sprague 1, sw ne nw 33-5s-4w, Cutler tnp, rig.

Wayne County—Weinert, Inc.'s Leslie Cunningham 1, c s nw ne 27-2s-8e, Barnhill tnp, rig.

White County—Arab Petroleum Corp., Roy E. Pearce 1, ne nw nw 35-6s-10E, Emma tnp, loc.

COMPLETIONS

Cumberland County—Paul Doran et al's H. Haskett 1, sw sw nw 15-10n-7e, Neoga tnp, Cypress sand dry, abnd 2050 ft.

Jefferson County—Palaciene Oil Co. and Eason's Inland Steel Co. 1, c se ne 29-4s-2e, Elk Prairie tnp, top McClosky 2874 ft, abnd 3165 ft.

Macon County—Decatur Oil & Gas Co.'s L. W. Cook 1, ne ne sw 21-15n-2e, South Macon tnp, top Trenton 3035 ft, abnd 3175 ft.

Marion County—Kingwood Oil Co.'s Burge 1, ne ne se 18-1n-2e, south outpost of Lake Centralia-Salem field made a deep test after Benoist and McClosky were found dry, top Devonian 3400 ft, abnd 3658 ft.

Wabash County—Cecil Keneipp's J. Kogan Heirs 1, se ne nw 2-1n-12w, Wabash tnp, top Bridgeport 1065, abnd 1085 ft.

KANSAS

FIRST REPORTS

Barton County—Gulf Oil Corp.'s Dolecheck 1, c nl ne sw 24-16-12w, rur.

Butler County—Simpson Oil Co. et al's Evans 1, csl sw 21-28-7e, rur.

Graham County—Continental Oil Co.'s Putnam "A" 1, cwl nw 23-9s-21w, dr.

Rice County—Phillips Petroleum Co.'s Proffitt 1, c el ne ne 8-20-9w, dr. Rennie et al's Williams 1, c s½ se sw 27-21-9w, lcn.

Sedgwick County—Cameron et al's Fields 1, nec nw 4-28-2e, rur.

Stafford County—Lauck et al's Connaughley 1, swc 18-24s-13w, lcn.

COMPLETIONS

Reno County—Barnsdall Oil Co.'s Krehbiel 1, nec 18-25-5w, 2½ mi e Casteton, top Topeka 2170 ft, top Lansing 2735 ft, top Chat 3443 ft, top Viola 3832 ft, top Simpson 3863 ft, top Arbuckle 3954 ft, abnd 4000 ft.

Sedgwick County—Hudson et al's Fulton 1, nec se 35-28-1e, 3 mi se Robbins pool, top Lansing 2196 ft, abnd 2356 ft.

NORTH LOUISIANA

FIRST REPORTS

Bienville Parish—Ark. La. Gas Co.'s A. B. Shehee 1, c nw sw 13-16n-10w, moving in materials.

De Soto Parish—T. D. Humphries' La. Land & Inv. Co. 1, ne ne se 11-12n-14w, lcn.

COMPLETIONS

Sabine Parish—LeGrande & Brown's Tatum 1, ne nw ne 17-8n-13w, sg 1120 ft, top marl 1885 ft, top chalk 1901 ft, pumping 10 bbls oil day, td 2340 ft after acidization.

Caddo Parish—J. O. Whittington et al's Grayson 1, c se se 30-19n-15w, elev 286 ft, massive anhydrite 4425-4690 ft, top Gloyd 4895 ft, abnd, td 6042 ft.

SOUTH LOUISIANA

FIRST REPORTS

Allen Parish—Bel Oil Co.'s Bel Estate 1, North Elton prospect, center of se ne sec 22-6s-3w, lcn.

Beauregard Parish — Atlantic's Lutcher Moore 1, Merryville area, 330 ft n and 330 ft w of sec se ¼ nw¼ 22-3s-11w, lcn; Riceland 1, 330 ft n and 330 ft e of sec ne¼ ne¼ 22-3s-11w, lcn.

St. Martin Parish—Roper & Todd's Levert 1, 660 ft due e of the nwc of lot 40 of sec 44-10s-7e, Pine Alley prospect, lcn.

MICHIGAN

FIRST REPORTS

Allegan County—Gordon Oil Co. and Hilliards' Bender 1, nw ne nw 27-2n-11w, rig.

Barry County—Ralph LaBlanc's Nottingham 1, sw sw se 9-1n-10w, lcn. Redman Oil Co.'s Slynn 1, ne ne sw 23-4n-9w, rig.

Lapeer County—Smith Petroleum Co.'s Depositors Corp. 1, nw nw nw 27-9n-9e, rig.

COMPLETIONS

Calhoun County—Verona Crude Oil Co.'s Fruin 1, ne sw ne 29-1s-7w, Pennfield twp., Niagara lime 2790 ft, so 2847 ft, water 2915 ft, abnd.

Ottawa County—Michigan Devonian Pet. Co.'s DeKock 1, se ne se 22-5n-13w, Jamestown twp., abnd 2825 ft.

Van Buren County—C. C. Gogg's Miller 1, nw nw ne 24-1s-14w, Bloomingdale twp., Traverse 1297 ft, td 1355 ft, after acid potential 800 barrels. Walter Bochenek's Ribicki 1, ne ne sw 3-2s-17w, Covert twp., Traverse 1008 ft, td 1148 ft, dry. R. A. T. Wright's Young 1, nw sw nw 16-4s-15w, Hamilton twp., Traverse 935 ft, td 973 ft, dry.

NEW MEXICO

COMPLETION

Chaves County—Elmer J. Fisher et al, Foster 1, c nw nw 7-15-26e, elev 3455 ft, abnd 1281 ft.

Rio Arriba County—Oil City Pet. Co.'s Wirt-Sanchez 2, 12-31n-2e, abnd 478 ft.

OKLAHOMA

FIRST REPORTS

Beckham County—McLaughlin et al's Durham 1, c sw¼ 36-8n-24w, machine.

Creek County—Burke-Greis et al's Vanderslice 1, nec se 30-14n-7e, rur.

Garvin County—Pure Oil Co.'s Derdeyn 1, c ne nw se 19-3n-1e, dr.

Grant County—Smythe et al's State 1, c se sw 16-25n-4w, lcn.

Grady County—Henry's Thomas 1, ne se ne 9-5n-7w, pits.

Kiowa County—Wichita Oil, Inc.'s Mace 1, swc 11-5n-15w, dr.

COMPLETIONS

Okfuskee County—I. T. I. O. Co.'s Palmer 1, ne se nw 5-10n-9e, 1 mi n Olympic pool, top Henryetta Coal 1807 ft, top Senora 1828 ft, abnd 1942 ft.

Pottawatomie County—Wood Oil Co.'s Peters 1, sw se nw 28-8n-4e, completed as north extension to St. Louis pool, ½ mi n St. Louis pool, top Senora 3545 ft, top Caney 3900 ft, top Mayes 3930 ft, top Misener 4090 ft, top Hunton 4111 ft, top Sylvan 4155 ft, top Viola 4275 ft, top dense 4310 ft, top Dolomite 4365 ft, top Wilcox 4540 ft, td 4560 ft, shot 95 perf. 4085-4153 ft, acidized with 6500 gals, 70 bbls, Misener and Hunton pay.

NORTH TEXAS

FIRST REPORTS

Archer County—Bridwell Oil Co.'s V. F. Veitenheimer 1, 200 ft out of sec sec 60, Clark-Plumb sub-div, blk 4, moving in for 1950-ft test. Eph P. Griffin et al's W. T. Waggoner 2, 1593 ft fr s and 466½ ft fr e lines of H&TC sec 3, blk 4, moving in for 4500-ft test.

Cooke County—Tom Patton et al's J. H. Honeycutt-Texas Co. 1, near center 65-ac tract, J. M. Ford sur A-1632, 3 mi s Best pool, lcn for 5000-ft test.

Jack County—Rowan-Nichols Oil Co.'s E. Haag 1, 466 ft w and 1243 ft n of sec of tract, McKinney-Williams sur, A-436, lcn.

Montague County—Cordova Union Oil Corp's R. L. Cable 1, 660 ft fr se and 990 ft fr sw lines of S. H. Stephenson sur, 5 mi sw of St. Jo., lcn for 4500-ft test. Seitz-Comegys & Seitz, Inc.'s G. H. Geurin 1, 330 ft fr s and 1025 ft fr w lines of R. H. Grimes sur, A-288, 5 mi n of St. Jo., mim for 3000-ft test. Staley Oil Co. et al's E. D. Nunley 1, 330 ft fr e and 274 ft fr s lines of 35-ac lease, or 7400 ft n and 8050 ft w of sec of N. S. Ussery sur A-824, 2 mi sw Montague, sd for rotary 40 ft.

COMPLETIONS

Archer County—Eph Griffin et al's J. T. Longley 1, 2327 ft fr s and 1988 ft fr e lines of Jos. Levins sur, A-260, Gunsite lime 1017-26 ft, trace oil 1073-76 ft, abnd 1301 ft. I. E. Harwell et al's Walter Ford 1, 2050 ft fr s and 330 ft fr s lines of north 250-acres of south 350 acres of David Meyer sur A-278, dry

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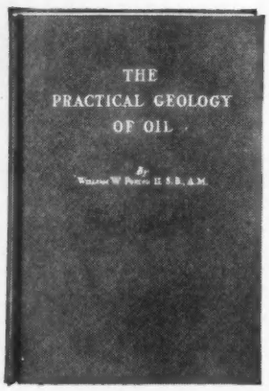

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Jack County—Pitzer-West et al's Fred Warren 1, 850 ft fr n and e lines sec 2784, TE&L Co. sur, top gray lime 4358 ft, pay 4365-4418 ft, pb fr 4480 ft, used 10,000 gals acid, pumped 125 bbls oil and 112 bbls water.

Young County—K. R. March-Craig et al's Hunt-McClatchey 1, 150 ft out of nec of south 100-ac of west 213-acres of sec 79, TE&L Co. sur, Gunsite lime 1092-95 ft, sand 1131-34 ft, pumped 40 bbls oil and 40 bbls water initial.

EAST TEXAS

FIRST REPORTS

Freestone County—Jack Frazier et al's Fred Marberry 1, 2800 ft fr n and 3300 ft fr e lines of S. P. Flint sur, 1½ mi ne Kirvin, cem sur pipe.

Limestone County—Harvey Richardson et al's N. H. Banks 1, 900 varas fr nw and 700 varas fr sw lines of B. Davis sur, or center 8-ac tract, 2½ mi ne Thornton, rig. Stanley A. Thompson et al's R. L. Nance 1, 1300 varas fr w and 900 varas fr n lines of 596.3-acre tract and J. D. Brown sur, 4½ mi e by n of Kosse, rigging rotary.

San Augustine County — D. McDaniel's Muckleroy 1 (500-ac), moving in materials (Carrizo test).

COMPLETION

Freestone County—A. J. Willis et al's W. W. Craig 1, 660 ft fr se and 330 ft fr ne lines of 58¾-acre tract and G. Teas sur, 8 mi n Fairfield, elev 311 ft, abnd in Woodbine water sand 3752 ft.

WEST CENTRAL TEXAS

FIRST REPORTS

Callahan County—Producers Pet. Co.'s J. M. Morriset 1, 1170 ft fr n and 150 ft fr w lines of sw¼ T&P sec 91, blk 13, moving in materials.

Stephens County—Lone Star Gas Co.'s C. J. O'Connor 1, 660 ft fr m/s/n line and 755 ft fr m/e/e line of T&P sec 51, blk 7, moving in materials.

WEST TEXAS

COMPLETIONS

Irion County—Clyde Crabb et al's W. M. Noelke 1, 330 ft fr n and 4950 ft fr w lines of Tom Green C.S.L. sur, 2¼ mi n Monument, trace oil with water 1750-65 ft, abnd 1805 ft.

Jones County—Buffalo Oil Co.'s H. Wood 1, 330 ft out of nec T&P sec 53, blk 15, hfw 2235-55 ft, abnd 2258 ft. Gillespie and Fain-McGaha Oil Corp.'s W. H. McKeever 1, sw ne nw sec 54, Orphan Asylum Lands, abnd 2350 ft.

SOUTH TEXAS

COMPLETIONS

Bastrop County—H. H. Coffield's McAden 1, 1200 ft sw line, 450 ft se line, 200-ac lse, Antonio Navarro sur, abnd 2170 ft.

Blanco County—H. C. McCart's Lester 1, 1600 ft e line, 1400 ft n line of Antonio Band-Rando sur No. 161 in 5400-ac tr, hole crooked, moved over to drill new hole. Ed L. Nixon's No. 2 Charles E. Crist, 1000 ft n line, 1000 ft e line of 320-ac lse, survey 94, abnd 657 ft.

Comal County—O. W. Killam's Gruene 1, 150 ft ne line and 150 ft se line of 420-ac tr, Henry Foster sur 34, top Austin chalk, 291 ft top Eagleford, 485 ft; top Buda, 506 ft; top Del Rio, 541 ft; top Georgetown, 580 ft; top Edwards lime, 615 ft; and top Glen Rose, 1049 ft; abnd 1745 ft.

Duval County—Hamill & Smith's Weil 1, 330 ft nw line, 660 ft ne line of e 40-ac of s 160-ac, BS&F sur 567, top lower Government Wells, 2562 ft; top Mirando, 2735 ft; sw in sand 2562-92 ft, abnd 3504 ft. Texas-Inland Oil & Gas Co.'s Nueces Land 1, 220 ft s line, 540 ft w line, BS&F sur 175, top Munson, 1172 ft; top basal Mirando, 1194 ft; sw sand 1194-1215 ft, abnd 1217 ft.

Guadalupe County—Diamond-Half Oil Co.'s Jacobs 1, 150 ft ne line, 150 ft nw line of 44.75-ac tr, Ben Fuqua ¼ league, top hard Taylor, 2384 ft; top Austin chalk, 2824 ft; cut fault no Eagleford, Buda nor Del Rio, top Georgetown, 2898 ft; top Edwards, 2946 ft, abnd 2969 ft. Hamill & Hamill's Zuehl 2, 420 ft se line, 150 ft sw line of 225-ac tr, Vincente Duran sur, top Austin chalk 1625 ft, top Edwards, 1927 ft, abnd 1940 ft, sulphur water in Edwards. N. C. Landrum's Walker 1, 150 ft n'ly s line and 150 ft e'ly e line, 98-ac tr, Cortinas and White sur, abnd 791 ft.

Medina County—Gilcrease Oil Co.'s Lilly 1, 250 ft n'ly n line and 330 ft e'ly w line of 600-ac tr, and sur 1359, top Midway, 880 ft; top Navarro, 1140 ft; top Taylor, 1746 ft; top Anacacho, 2340 ft; top hard Anacacho 2360 ft; top Austin chalk, 2707 ft; top Eagleford, 2890 ft; top Buda, 3025 ft; top Del Rio, 3103 ft; top Georgetown, 3165 ft; top Edwards, 3215 ft; gas sand, 1955-2010 ft, abnd 3219 ft, sulphur water.

Nueces County—Seaboard Oil Corp.'s Chapman et al, 8, 467 ft s line, 467 ft e line, sec 47, El Rincon De Corpus Christi grant, Laureles farm lots subd, abnd 6518 ft.

Webb County—Interstate Minerals, Inc., and Edgar Younger's R. Lopez 1, 330 ft n line, 240 ft e line, blk 44, sur 309, abnd at 2250 ft.

TEXAS GULF COAST

COMPLETIONS

Colorado County—Mills Bennett Prod. Co.'s Truchard 1, 3 mi e of Mentz, 640 ft fr ne line and 1300 ft fr the se line of 86-acre tract, Ed. Corbit survey, topped Hockleyensis 3612 ft; Cockfield, 4429 ft; Discorbis Yegua, 4535 ft; Cook Mt., 5670 ft; sand 7767 to 7900 ft; abnd 7900 ft.

Galveston County—Sun's Cade Estate 2, Caplan area, S. F. Hughes survey, 150 ft n of RR and 469 ft from sw line of sur, comp. 307 bbls 34 gravity oil daily, sands 7474 to 7478 ft.

WYOMING

FIRST REPORTS

Natrona County—Summit Oil Co.'s Government 2, nw ne ne 21-33n-80w, 8 miles southwest of Casper, on North Platte structure, dr 26 ft.

Motors

A new leaflet (No. 2183-A), entitled "Lo-Maintenance Direct Current Motors and Generators," has just been released by Allis-Chalmers Manufacturing Company, Milwaukee, Wisconsin. The equipment is described and illustrated, and details of construction are explained.

"Explosion-Proof Motors," a special leaflet (No. 2125-C) on motors that give protection in explosive, fume-laden atmospheres, has also been released by Allis-Chalmers. It includes numerous construction and installation views, showing Allis-Chalmers Explosion-Proof Motors in a variety of dangerous applications.

Available

BUSINESS MANAGER

Financial executive with accounting and legal training, experienced as Comptroller, General Auditor, Secretary and Treasurer, and Director in large corporations handling office management and supervision of all divisions of related work including accounting, credit management, purchasing, personnel, etc., in general office and many field offices. Now employed in Southwest. Age 37, married and have family. Higher education in Accounting, Business Management and Law. Salary expected commensurate with responsibilities of position. Box 3555, The Oil Weekly, Houston, Texas.

HOARD EXPLORATION COMPANY
Seismograph Surveys
618 Esperson Bldg.
Houston Texas

HOUSTON LABORATORIES
Analytical and Consulting Chemists
Podbielniak Gas Analysis
Oil Field Brines, Waters and Cores
Complete Evaluation of Crude Oils
Long Distance 267, Box 132, Houston, Texas

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LETTERS TO THE EDITOR

GENTLEMEN:

Have been reading with a great deal of interest the weekly article on the "Economically desirable gasoline level for March 31" and the rapidly increasing weekly surplus seems to me to be a personal matter and that I am being drowned in it and all chances of my operating a number of small wells at a profit is being pushed further into the distance.

In the preparation of these articles you undoubtedly have a break down as to which refining units have exceeded the reserves they had on hand in March, 1937. I think an article would be of intense interest that would disclose the names and amounts of these refining units.

Am sure many small operators would welcome this information as we do not have access to information of this character.

WILL C. MEE, *President*
Sterling Drilling Company, Inc.,
Standish, Michigan.

DEAR SIRS:

I wish to compliment you and your staff upon the excellent appearance of the article on petroleum engineering departments of American universities, and I am sure that the information contained will be of interest to many prospective petroleum engineering students and to those engaged in teaching petroleum engineering in the universities and colleges.

LESTER C. UREN,
Professor of Petroleum Engineering
University of California,
Berkeley, Calif.

DEAR SIRS:

I have just finished studying the petroleum engineering educational section in the March 6 OIL WEEKLY, and believe THE OIL WEEKLY has made a real contribution to the industry in compiling these data on the schools offering courses in petroleum engineering.

HAROLD VANCE,
Petroleum Engineering Department
Texas A. & M. College,
College Station, Texas.

DEAR SIR:

An argument has come up as to which is the deepest drilled hole in the world, and we are referring to you as an authority on this matter.

One person maintains that Continental Oil Company's KCL A-2, Wasco field, Kern County, California, which was drilled to 15,004 feet, and is producing at 13,175 feet.

The other party states that the deepest drilled hole is in Louisiana Gulf Coast, drilled to 15,028 feet and producing from 13,266 feet.

JAMES ALLEN,
Caribbean Petroleum Company,
Maracaibo, Venezuela.

The deepest drilled hole in the world is Continental Oil Company's KCL A-2, Wasco field, Kern County, California, which drilled to 15,004 feet and is producing from 13,175 feet.

The deepest producing well is Fohs Oil Company's Bourg 1, West Dulce field, Louisiana Gulf Coast, producing at 13,266 feet after drilling to 13,409 feet.

For further details see article page 58 of THE OIL WEEKLY of January 30, 1939.

DEAR EDITOR:

A few years ago I remember reading in THE OIL WEEKLY that *full* storage tanks were hanging like the sword of Damocles over the oil business, and in your issue of March 13 I notice that *empty* storage tanks are hanging like the swords of Damocles over the oil industry.

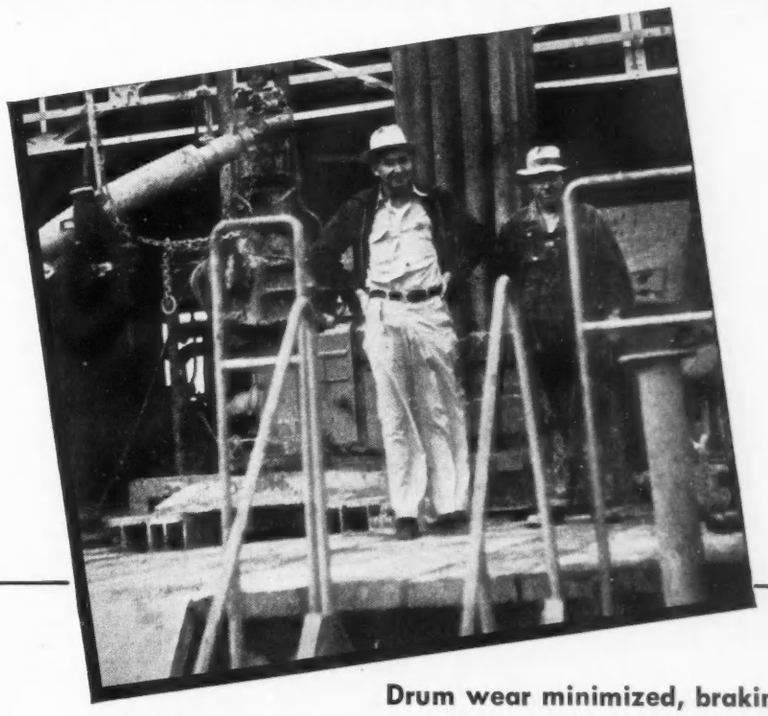
From which I judge that it isn't the oil or the lack of it but the tanks themselves which are like the swords of Damocles—which reminds me, isn't it about time to recognize the fact that the sword is no longer implement of warfare but has been relegated to parades and all of that sort of hooey?

PAUL PEEBLES, PSG & I.E.

Stainless Steel

Stainless steel castings are described and illustrated in a new pamphlet recently published by the Stainless Steel Division of the Smith Steel Foundry Company, Milwaukee, Wisconsin. This pamphlet shows a series of typical castings, and lists six commonly used Smith alloys.

NO RIM SCORING ON THIS JOB!



Drum wear minimized, braking efficiency improved and costs reduced on Humble Oil Company rigs, with J-M 420 Rotary Lining

IF you've ever had trouble with scored brake drums on a drilling rig, you know what the Humble Oil Company crews were up against at Houma and Potash, La. Valuable time was being wasted . . . load control was uncertain . . . and replacements were costing plenty.

Then they installed new brake drums equipped with J-M 420 Rotary Lining. Rigs began to run better right away. After more than fifty round trips, this tough lining showed no noticeable wear. Crews say it gives the most even feed-off and easiest load control of any lining they ever used. Today, brake drums are in perfect condition . . . look good for long-continued efficient service.

You can use this rugged rotary lining to good advantage on your own equipment. Made of high-quality, wire-inserted asbestos yarn, J-M 420 is woven and impregnated by an entirely new process that provides every characteristic desired in a rotary lining. For details, write Johns-Manville, 22 East 40th Street, New York, N. Y.

JM Johns-Manville 420 ROTARY BRAKE LINING

NOTES FOR THE Equipment Buyer and User

Casing Roller

EASTMAN OIL WELL SURVEY COMPANY

A new casing roller designed to roll out collapsed or rough casing and liners to their proper size and shape has just been introduced by Eastman Oil Well Survey Company, Dallas, Texas.

The Eastman casing roller has a specially heat-treated steel body with rollers and balls inserted on the outer surface. The body is made in three parts. The rollers are held in place by the body which encircles about two thirds of the rollers' circumference. The special steel rollers and balls are so arranged that they give a maximum of rolling surface as well as minimizing vibration and friction on the body. The tool is blunt on the bottom so that it will not puncture the collapsed casing. Sizes range from 3⅛ to 17⅜ inches in diameter.

Unit Pumper

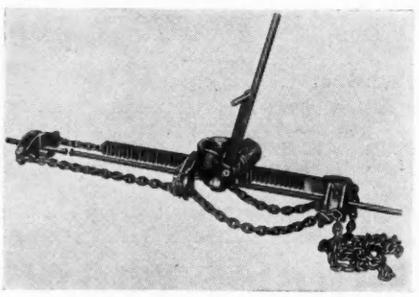
THE NATIONAL SUPPLY COMPANY

A unit pumper that the maker claims makes single-well pumping practical and economical in the shallowest fields has recently been introduced by The National Supply Company. This pumper, known as the National Type TU2OG-JD2T, is especially suited for those installations where the terrain is rough or where it is desirable to vary strokes and duration of pumping as between wells. It also offers a means of eliminating long rod lines, and since it is easily moved and installed, makes an economical temporary lifting unit.

This pumper is of the twin-crank design. A double reduction gear provides a sufficiently high overall ratio to utilize low-cost high-speed prime movers. At the same time sufficient variation is possible in V-belt drive ratios to also adopt medium speed engines and motors.

The A.P.I. walking beam rating is 3000 pounds. Maximum polished rod stroke is 15 inches with a maximum counterweight effect at maximum stroke of 1792 pounds. The peak torque rating of the reduction gear is 5400 pounds while the overall gear ratio is 26. A special feature is a compact all-welded construction which achieves rated capacity with less weight. Full information is given in National Descriptive Bulletin No. 212.

TU2OG-JD2T National Unit Pumper



Simplex 440 Pull Rod Jack

Pull Rod Jack

TEMPLETON, KENLY & COMPANY

Templeton, Kenly & Company, Chicago, has introduced the No. 440 Simplex Worm Gear Pull Rod Jack for repairing deep well pull rod breaks.

They are fast as it is only necessary to turn a crank to take up the slack. Making pull rod repairs is a one-man job requiring only a matter of minutes and a minimum of manual effort, the maker claims.

The new unit has a fully enclosed dust-proof 7-ton geared mechanism; is light, providing greater portability; and is ruggedly constructed. Improved one-piece slips are easily applied and quickly removed.

Broken rods on central powers or back-crank units are pulled in a straight line and without kinking rods, according to the statements of the manufacturer.

"Turtle-backs" are easily installed and ample space for "heading up" is provided.

A new bulletin available on request fully describes its application.

Pulling Unit Accessories

CONAGHAN EQUIPMENT COMPANY

A complete system for handling cables common to well servicing has been developed by Conaghan Equipment Company, Tonkawa, Oklahoma. The group of equipment is called the "Snappy System," and is an arrangement that facilitates stringing up and removing cables used with portable well servicing equipment.

The accessories consist essentially of a 37-pound, alloy steel hook for use on either rod or tubing line; cable ends; cable connectors; and derrick line snaps. The manufacturer will be glad to furnish additional information.

Gauge

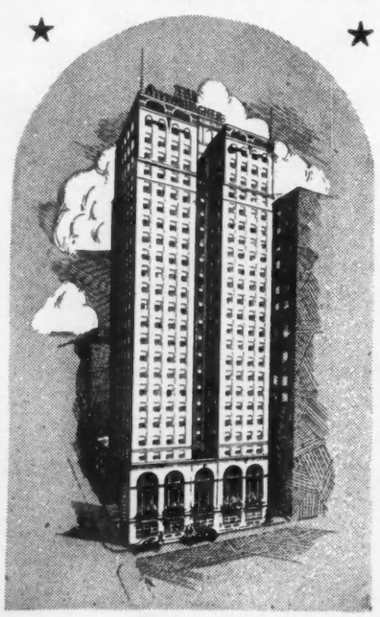
THE INFERNO COMPANY

A new "Clamp Type" Reflex Gauge is now available to the oil industry at supply stores and is made by The Inferno Company, Shreveport, Louisiana.

Each side of the new gauge is completely housed by one of the two clamps. They can be removed separately. When installing a new glass, glass and gasket are easily held in exactly the right place while the first clamp is put on and tightened. Pressure from each clamp screw is distributed evenly over the entire area of contact between glass and clamp, so that it is impossible to exert too much pressure on any one screw. The clamps can be removed, a new glass and gasket inserted, and the clamps replaced in a fraction of the time necessary for changing a glass in a conventional gauge. The gauge has a wider, heavier glass than is used with the ordinary reflex gauge. This wide, heavy glass lasts many times as long as

BAILS MUST BE GOOD
Bails do not cost a great deal to buy. But they can cost a fortune if they let go. Care in selecting the steel from which they are made is the essential ounce of prevention.
Chrome-Molybdenum (SAE 4140) steel makes bails that will stand the worst sort of service for a long time. The steel has not only the requisite strength, but good yield point and good ductility as well. Heavy loads can be applied instantaneously without fear of failure. Also, there's ample hardness to prevent premature weakening because of rapid wear.
Bails are but another example of the way Molybdenum steels are increasing the safety factor and economy of drilling. All these steels and their applications are described in our new book "Molybdenum Steels in Oil Production". A copy will be sent free on request.
Climax Molybdenum Company
500 Fifth Avenue New York City
MOLY

SALE OF OIL AND GAS LEASES—Department of the Interior, General Land Office, Washington, D. C. Notice is given that the following described lands and deposits of oil and gas therein contained are offered to the qualified bidder of the highest bonus per acre for leasing, pursuant to section 17 of the leasing act of February 25, 1920 (41 Stat. 437), as amended by the act of August 21, 1935 (49 Stat. 674), at the royalty rate scale in the lease form shown in Circular 1386: Unit No. 1, the principal Island, East Timbalier Island, known locally as Bird Island, located in fractional Secs. 34, 35 and 36, T. 23 S., R. 21 E., Secs 2 and 3, T. 24 S., R. 21 E., and Sec. 31, T. 23 S., R. 22 E., Louisiana Meridian, situated on the Gulf Coast of La Fourche Parish, State of Louisiana, lying above the elevation of mean high tide, containing 295.77 acres, more or less. Unit No. 2, two islands, adjoining Unit No. 1 in a northeasterly direction between said principal island and Raccoon Pass, Island No. 1 located in fractional Sec. 31, and Island No. 2 located in fractional Sec. 32, both in T. 23 S., R. 22 E., Louisiana Meridian, situated on the Gulf Coast of La Fourche Parish, State of Louisiana, lying above the elevation of mean high tide, containing 11.69 and 69.29 acres, respectively, more or less. Sealed bids will be received in the office of the Secretary of the Interior up to 12:00 o'clock (noon) April 3, 1939. Bids must be submitted on each unit separately but both units, if awarded to the same bidder, may be included in a single lease. Each bidder must submit a certified or cashier's check or draft for 1/5 of the amount bid, payable to the order of the Secretary of the Interior, and furnish a showing of qualifications as required by section 7 of Circular 1386. The remaining 4/5, together with the annual rental at the rate of $1 per acre, must be paid by the successful bidder prior to the issuance of lease, and the deposits of other bidders will be returned. The envelopes should be marked plainly "Bid for Unit No.————(1 or 2), East Timbalier Area. Not to be opened before noon, April 3, 1939." The bidders are warned against violations of the provisions of Sec. 59 of the United States Criminal Code, approved March 4, 1909, prohibiting unlawful combination or intimidation of bidders. The right is reserved to reject any and all bids in the discretion of the Secretary of the Interior. Protests by the State of Louisiana and others claiming under the State against the granting of Government leases for the group of islands on the ground that they are the property of the State were overruled by the Secretary of the Interior in a decision rendered July 29, 1938 (A.21589), after an oral hearing at which the protestants were represented. The Secretary held that the United States had asserted ownership of and jurisdiction over East Timbalier Island for more than 100 years and that the group of islands are public lands of the United States. In the interest of securing full and unrestrained bidding, assurance is given to all bidders that the United States will defend its title to the Islands on its own behalf in any litigation instituted in which, in its judgment, any issue of title to the Islands is properly and appropriately raised. In the event litigation is instituted in which title to the Islands is involved and the claim of title of any adverse party is ultimately sustained, the full amount of bonus paid by the successful bidder will be returned to him. Commissioner, General Land Office.



IN PITTSBURGH

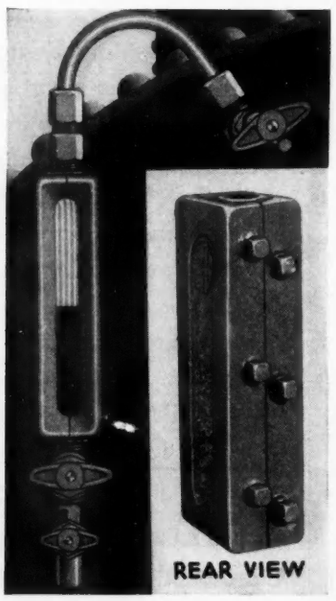
Stop at a new and popular hotel . . . 400 rooms all with outside view, circulating ice water, radio and bath. Excellent restaurants . . . Parking garage.

SINGLES $3 to $4 DOUBLES $4.50 to $6

THE PITTSBURGHER

A Knott Hotel Joseph F. Duddy, Mgr.

NOTES FOR THE Equipment Buyer and User



Inferno Gauge

standard glass, and is particularly helpful when water conditions are bad.

The new gauge is made in navy bronze or stainless steel. The navy bronze used is classified in the A. S. M. E. code as composition "M", and is suitable for ordinary boiler service where corrosive conditions are not severe, and is tested to 2000 pounds. It is recommended for working pressures to 350 pounds and for temperatures to 450° F. The non-corrosive steel gauge is tested to 2500 pounds. It is recommended for working pressures to 1000 pounds and temperatures to 1000° F.

A patented shade for correct illumination can be had with the new gauge, complete with socket.

Bulletin No. 19, illustrating and describing the new gauge, and showing parts and prices, can be had at supply stores or direct from the company.

Rod Hanger

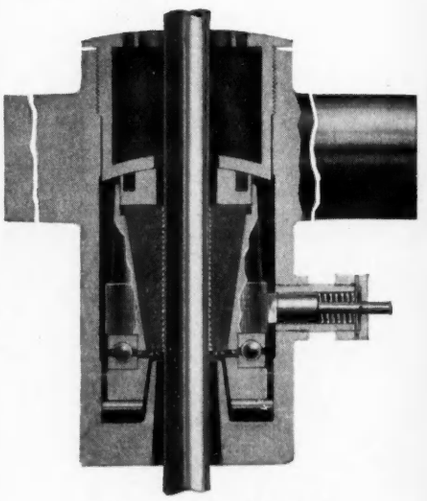
ADVANCED PETROLEUM EQUIPMENT CORPORATION

A new design of polished rod hanger, which according to the manufacturers, is the solution to many production problems, has been introduced by Advanced Petroleum Equipment Corporation, Houston, Texas. This is a patented product which is simple and foolproof, and which offers advantages not found in conventional types of hangers, the maker claims.

The polished rod is held firmly in slips which set in a bowl mounted on ball bearings. A rotating element keeps the rod turning continually while the well is pumping, which permits an even distribution of rod wear. The slip bowl is also supported on two rocker bearings which allow it to rock freely, compensating for any stress or strain resulting from the polished rod not traveling in perfectly straight lift.

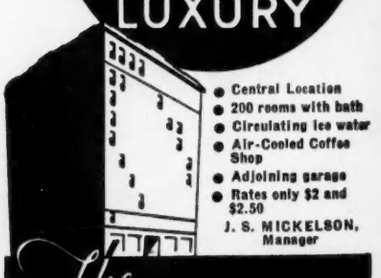
Advantages claimed include: Rocking action reduces the bend on the polished rod, thereby eliminating considerable wear on the stuffing box; constant rotation of sucker rods assures uniformly distributed wear on working barrel, and consequently longer life; any danger of the sucker rods backing off at the couplings is eliminated; rotation eliminates any continual wear in one position on rods.

The hanger is designed to handle the maximum depths of production, and has been tried and tested in the field by competent engineers. The manufacturer will furnish detailed information upon request.



Advanced Rod Hanger.

Next time... visit HOUSTON'S HOTEL OF LOW COST LUXURY



- Central Location
- 200 rooms with bath
- Circulating ice water
- Air-Cooled Coffee Shop
- Adjoining garage
- Rates only $2 and $2.50

J. S. MICKELSON, Manager

The SAM HOUSTON HOUSTON, TEXAS

NOTES FOR THE Equipment Buyer and User

Pneumatic Scaling Hammer

THE ROTO COMPANY

A new type of pneumatic scaling hammer which is said to be unusually powerful, considering its light weight, has just been introduced by the Roto Company, 151 Sussex Avenue, Newark, N. J., after extensive tests in the field.

The new Roto scaling hammer descales boiler drums, headers, evaporators, etc., and drills holes in concrete and metal. It also chips anything from wood to steel castings, and is used for scraping paint, rust, ship hulls, etc. The hammer weighs less than 6 pounds, and operates at from 40 to 90 pounds pressure, consuming only 10 cubic feet of free air per minute. Its shape was designed to facilitate operation in tight, inconvenient locations. A ground steel plunger is the only moving part. A flat chisel and star drill are furnished with each hammer.

Vertical Gas Engine

THE COOPER-BESSEMER CORP.

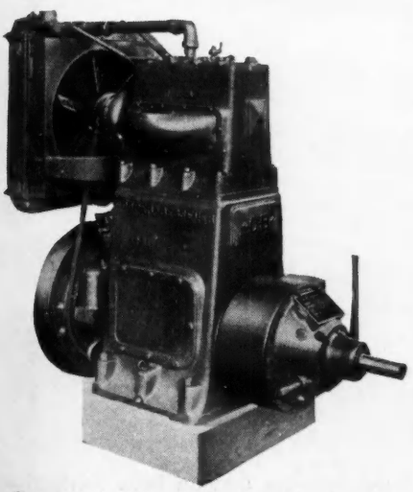
The Cooper-Bessemer Corporation, Mt. Vernon, Ohio, has recently announced a new addition to its line of the Type G-SC Vertical Pumping Engine.

Designed primarily for oil field pumping and drilling service, this engine is also fully adapted to auxiliary and light power needs. Built to heavy engine standards, Type G-SC is shipped as a completely assembled unit, with radiator and fan as standard equipment.

The G-SC engine is rated 25 to 35 horsepower at speeds of from 600 to 800 r.p.m. It is a two-cylinder, two-cycle unit with bore of 5½ inches and stroke of 7 inches. Its overall height is 4 feet 1¾ inches, overall width 2 feet 6 inches, and overall length with clutch 5 feet. The minimum amount of concrete required for its foundation is given as 1 cubic yard. Starting may be accomplished either by hand or compressed air. Meehanite Metal, known for its strength and resistance to wear, is used for all cast parts of the engine.

The vertical design and low overall dimensions of the Type G-SC reduce foundation and housing costs to a very minimum and these features, together with its lightweight, make it an easily transported and installed unit. Among many features claimed by the maker are: low first cost, low foundation and housing costs, extreme portability, long-life construction and design, magneto ignition, full pressure lubrication, clutch or straight pulley drive, slow-speed reliability, tapered roller main bearings, and low maintenance costs.

This new Type G-SC unit will be displayed at the Houston Oil Show, April 24 to 29 inclusive, where the Cooper-Bessemer exhibit will be housed in booth 1529. District sales managers and company executives will be on hand to meet visitors and explain this newest of the maker's products.



Cooper-Bessemer Vertical Gas Engine

New Hercules Specialties

Hercules Tool Company, Box 286, Tulsa, announce new literature on three new Hercules specialties. Bulletin No. 30-A gives complete description and prices on the company's new combina-

FOR PIPE LINE WELDING

SMOOTHARC "A. P."

GIVES YOU MORE SPEED WITH UNIFORMLY STRONG WELDS

You, too, will like this heavily coated electrode for its ease in welding pipe joints on flat, vertical or overhead work. Ideal for use on mild steels, "A.P." has a tensile strength of 65,000 to 70,000 lbs. per sq. in.; 25% elongation in 2". Available in sizes from 3/32" to 3/8". Ask for test samples.

In the complete line of Smootharc welding electrodes, there are all standard types as well as special purpose rods for cutting, hard surfacing, etc. For details, address The Harnischfeger Corporation, 4528 West National Avenue, Milwaukee, Wisconsin — or

Packed in Air-Tight Containers

Harnischfeger Corporation, 2223-25 Commerce Street, Dallas, Texas.
United Welding Supply Company, 3118 Harrisburg Blvd., Houston, Tex.
Allied Equipment Company, 1639 West Main Street, Oklahoma City, Okla.
Car Parts Depot, Incorporated, 712-20 Texas Street, El Paso, Texas.
Plattner Welding Supply, Coffeeville, Kansas.

HARNISCHFEGER CORPORATION

WELDING ELECTRODES • MOTORS • HOISTS P&H ELECTRIC CRANES • ARC WELDERS • EXCAVATORS

NOTES FOR THE Equipment Buyer and User

tion stuffing box and tee. Bulletin No. 35 gives similar information on the new Hercules Type D-9-R low-pressure tubing head, which is designed for use with Reda pumps. Complete description and prices pertaining to the company's new Type D-9 low-cost, full-opening tubing head, is contained in Bulletin No. 40.

SEE with SAFETY

Use ECOLITE 50S
Shoots Bright Spot A Long Distance

Ecolite 50S is an electric lantern specially designed for Oil Field use. It is safe in presence of inflammable gases and vapors. It's easily carried on the arm, giving freedom to hands. Recommended by Underwriters' Laboratories. *Available at Supply Stores.*

ECONOMY ELECTRIC LANTERN CO.
325 W. Huron St., Chicago

ECOLITE

BARGAINS
in first class used Oil Field Machinery of all kinds.
WE ALSO BUY OR TRADE
Highest prices paid for
PIPE PROTECTORS
Call us for an estimate.
RELIABLE SUPPLY CO., Inc.
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Box 2715 Phone C-9448
N. Perel, Manager

Standco
NO-SMOKE
STANDCO BRAKE LINING
Nothing novel—no bunk—but it gets the job done without scoring brake rims. See page 2100, Composite Catalog.
Standard Brake Lining Co.

W-K-M Appoints New Manager of Export Department

W-K-M Company, Houston, has appointed G. M. Stewart export manager in charge of foreign sales, succeeding

G. M. STEWART
W-K-M Company Export Manager

T. L. Putman, resigned. Stewart was formerly with W-K-M Company, and more recently with one of the major oil companies in Venezuela.

Gaso Executive Returns from Illinois

H. F. Stover, assistant treasurer and purchasing agent of the Gaso Pump & Burner Manufacturing Company, of Tulsa, recently returned from a 10-day business trip in Illinois and Kentucky.

Manning, Maxwell & Moore, Inc., Announce New Appointments

Appointment of Ralph F. Heath as sales representative in Houston and Jack Schuyler to the New Orleans territory are announced by Manning, Maxwell & Moore, Inc., of Bridgeport, Connecticut.

Heath who was formerly representative in New Orleans assumes his duties in a larger field in Texas with office at 229 Shell Building, Houston.

Schuyler with headquarters in the Carondelet Building in New Orleans, has for the past five years been connected with the Los Angeles branch office, and is well qualified for his contacts with the oil industry.

Both of these new appointments cover the complete line of industrial products of Manning, Maxwell & Moore, Inc. — Hancock valves, Consolidated safety valves, American instruments, and Ashcroft gauges.

The Continental Supply Company Formally Opens Houston Quarters

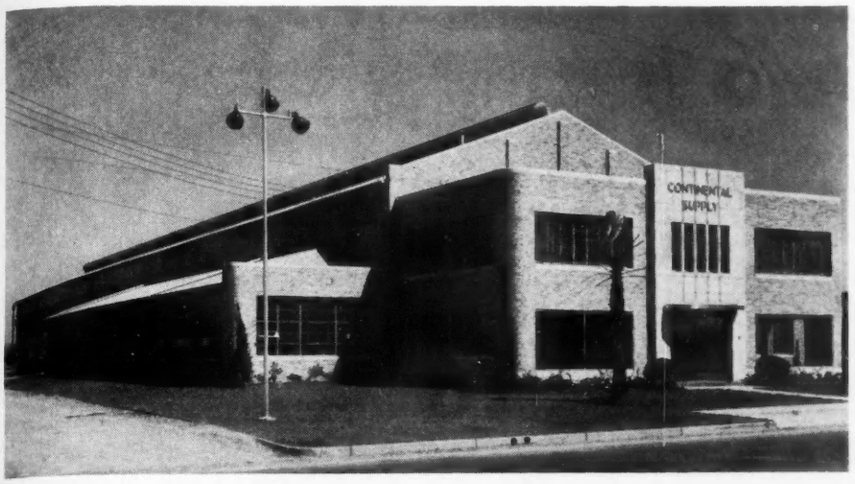
Trimmed with Texas limestone, and located on the Old Spanish Trail to Louisiana and Arkansas, the new Continental Supply Company office and warehouse building at 6015 Navigation Boulevard, Houston, will be formally opened on Thursday, March 23.

Built to meet the needs of expanding activity in the Gulf Coast area, the new unit also includes a pipe yard fronting on the Houston Ship Channel, allowing unloading direct to yard from barges.

The building itself, while designed primarily for the efficient handling and distribution of oil field machinery and supplies, is modern in appearance and appointments. It consists of two divisions: the offices, including showrooms, and the warehouse proper. Office space and showrooms occupy 3600 square feet of floor space and are air conditioned. Rubber tile provides a quiet floor covering for the offices while Azrock tile floors are used in the showrooms. Stainless steel gives a modern setting to the foyer and Venetian blinds are used throughout. Washrooms and showers are finished in tile.

The warehouse proper has a main bay 60 feet wide by 360 feet long over all of which is a 25-ton push-button-control

The Continental Supply Company's Pipe Yard, between and on both Navigation Boulevard and Houston Ship Channel at Houston.



The Continental Supply Company's New Warehouse Building at Houston, Which Will be Opened Formally This Week.

floor operated traveling crane. Two side bays 25 feet wide each and 140 feet long adjoin each side of the office portion. A railroad spur permits the unloading of two cars without switching.

Truck-high loading ramps facilitate loading and unloading of trucks. Total floor space in the warehouse is 28,600 square feet, with 21,600 feet under crane. A unique feature is the use of Blue glass to kill direct glare.

Twenty cars of pipe may be loaded daily from the pipe yard using the new 25-ton locomotive crane. Trucks may be loaded with equal facility. The entire yard is flood-lighted at night, making possible 24-hour service and insuring prompt filling of last-minute orders. Approximately 12,000 tons of tubular products are kept on hand at all times.

Incoming pipe moves from the mill of Continental Oil Company's parent company, The Youngstown Sheet & Tube Company, at Youngstown, Ohio, to Baden, Pennsylvania. It is floated by barge down the Ohio River to Cairo, Illinois; thence on the Mississippi River to New Orleans, and coastwise to Houston and the Ship Channel. The average trip requires from three to four weeks.

Continental Oil Company's improved facilities will offer an added service to the industry, insuring ample stocks of machinery, pipe, and supplies to meet the demands of expanding activities on the Gulf Coast.

Shacklette to Represent Union Wire Rope in Illinois Basin

Union Wire Rope Corporation of Kansas City, Missouri, announces that C. A. Shacklette is to act as sales representative for the company in Southern Illinois, Southern Indiana and Western Kentucky. He will maintain headquarters at 1000 Locust Street, Owensboro, Kentucky.

T. W. Moss Announced as New Dodge Truck Sales Director

Appointment of Tom W. Moss as director of Dodge truck sales to succeed J. D. Burke, resigned, has been announced by Forest H. Akers, vice president and director of sales of the Dodge division of Chrysler Corporation.

Moss, who for the past five years has been general service manager of the Chrysler Corporation in direction of the corporation's service activities relating to Plymouth, Dodge, De Soto and Chrysler divisions, will assume his new duties immediately.

Allis-Chalmers Houston Office Changes Address

The Allis-Chalmers Manufacturing Company's Houston, Texas, office, for handling power, electrical and industrial machinery, has been moved to 1719 McKinney Avenue. K. P. Ribble, district manager, continues in charge.

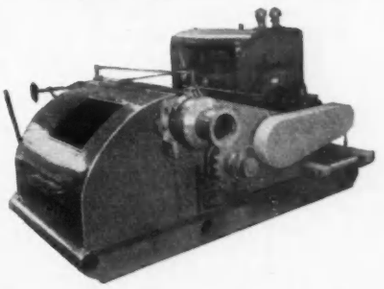
C. S. Stewart Representing Regan in San Joaquin Area

Regan Forge & Engineering Company has appointed Charles S. Stewart to serve its interests in the San Joaquin Valley district. Stewart's headquarters will be at 525 "F" Street, Taft, California.

Water Analysis Manual

W. H. and L. D. Betz, 235 West Wyoming Avenue, Philadelphia, have issued the fourth edition of the Water Analysis Manual which tells how to obtain representative samples and follow through with correct procedure and calculation of results of tests. Chemicals required are enumerated and apparatus illustrated.

For Economical Drilling to 3000'



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Westinghouse Gearmotors Described in Booklet

Westinghouse gearmotors, self-contained drives consisting of a high speed Westinghouse motor and necessary speed reducing unit, are illustrated and discussed in a booklet recently published by the Nuttall Works, Westinghouse Electric & Manufacturing Company, Pittsburgh, Pennsylvania.

Various types are available: single reduction gearmotors, with standard gear ratios up to and including 5 to 1; double reduction gearmotors, with standard ratios, 5.6:1 to 10:1, inclusive; double reduction gearmotors, with standard ratios, 11.2:1 to 40:1, inclusive; and triple-reduction gearmotors, with standard ratios, 45:1 to 200:1, inclusive. Gearmotor ratings are available from ¾ to 75 horsepower with any of the three standard motor speeds from 1750 to 870 r.p.m. There are 46 standard gear ratios available with each of the motor speeds, giving output speeds that range from 4.4 r.p.m. to 1550 r.p.m. Additional speed changes are possible by using suitable pulleys, sprockets and chains, or pinions, on the output ends of non-couple drives.

Copies of this booklet, descriptive data 3620, may be secured from headquarters at East Pittsburgh, Pennsylvania.

Die Heads

Landis Machine Company, Waynesboro, Pa., recently published a 12-page booklet describing its line of hardened and ground die heads.

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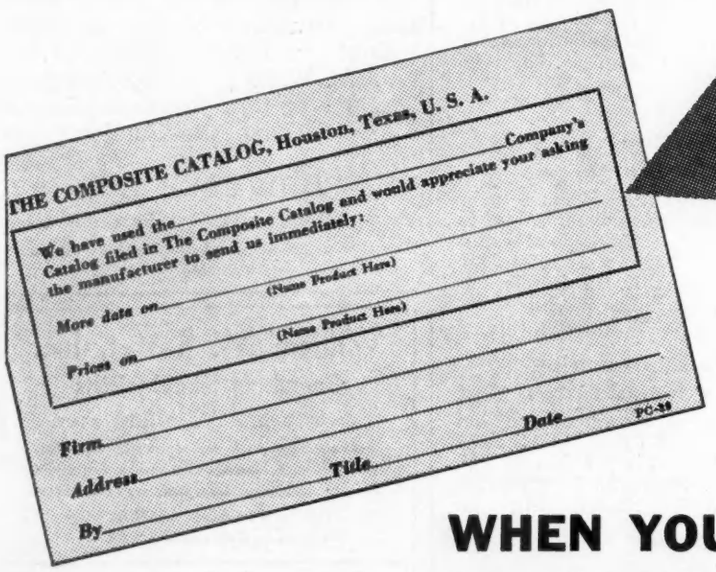
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A double supply of these blue, self-addressed, postage prepaid cards will be found inserted in the index of your Composite Catalog.

If you fail to find all the data you need on any piece of equipment, whether described in The Composite Catalog or not described therein, just fill out a blue card and drop it in the mail. The data requested will be sent promptly.

THE COMPOSITE CATALOG
OF OIL FIELD AND PIPE LINE EQUIPMENT

Roofing Products Catalog Is Available from Republic Steel

Information on special and standard steel roofing products is contained in a 32-page, two-color catalog entitled "Republic Steel Roofing Products," just issued by Republic Steel Corporation, Cleveland, Ohio.

Many styles and products of roofiing are illustrated and described. These include, in addition to such specialties as Republic Triple Drain Roofing and Accessories, Republic Super-Dry Roofing and Taylor Roofing Ternes, V-Crimped Roofing, Self-Capping Roll Roofing, Roll and Cap Roofing and Corrugated Roofing. Two other products, outside of the roofing products field, are highlighted—Republic Galvannealed Sheets and Enduro Stainless Steel Sheets.

Complete tabular information is incorporated covering standard weights per square, in pounds; estimating table for roofing products; allowances for laps on corrugated sheets; extras on galvanized or painted roofing and siding; rolling limits; freight per square on all forms of galvanized roofing and siding; and bundling tables for galvanized flat sheets.

Requests for copies of this catalog should be addressed to Republic Steel Corporation, Advertising Division, Cleveland, Ohio. Ask for Roofing Products book, ADV 320.

New Orifice Meter Handbook

Pittsburgh Equitable Meter Company has announced the publication of a new Orifice Meter Handbook entitled, "The Orifice Meter." This book, written by Allen D. MacLean, the company's chief engineer, contains valuable information relating to orifice meter measurement. Included in the 10 chapters of this 150-page pocket size handbook, with numerous illustrations, diagrams and charts, is a complete story on measurement by orifice. The theory and mathematics necessary to better understand the principles involved, together with equations and tables to accomplish the measurement of any normal gas or liquid, are included. Copies of the Orifice Meter Handbook, at $2.00 each, can be secured by writing the Pittsburgh Equitable Meter Company at 400 N. Lexington Avenue, Pittsburgh, Pa.

Pumping Units

The Continental Supply Company, Dallas, Texas, has recently published a new bulletin concerning its HS Series of single crank geared pumping units. This is a low first cost unit that is especially adaptable to slow speed pumping in connection with back cranking services and for multiple well pumping hook-ups. Designed to give a simple and compact installation on the shallow or medium wells for which they are recommended, operation of these units is characterized by smooth pumping and economical handling, it is stated. Complete information, including photographs and specifications, will be found in the 8-page descriptive bulletin, immediately available on request.

Pull Rod Carrier

Jarecki Manufacturing Company, Tulsa, has a new bulletin describing the Jarco Roller Pull Rod Carrier which explains the construction and use of this carrier for supporting surface pull rods.

Squeaks from the Bull Wheel

Poor Dad

"God gives us our daily bread doesn't he, mamma?"
"Yes, dear."
"And Santa Claus brings the presents?"
"Yes, dear."
"And the stork brings the babies?"
"Yes, dear."
"Then, tell me, just what is the use of having papa hanging around?"

Honeymoon

"Did you go on a honeymoon, Suzabelle?"
"Ah guess you might call it dat, Ma'am. Henry help me wid washing de fust week."

Close

"I want a close shave."
"You just had one, sir."
"How come?"
"The manicurist's husband left the shop just as you patted her on the knee."

No Progress

Sally: "Are you making any progress in your new job?"
Jane: "Heavens no; the boss hasn't complimented me on anything but my work."

Just An Auctioneer

"What am I offered for this beautiful bust of Robert Burns?"
"That ain't Burns. That's Shakespeare."
"Well, folks, the joke's on me. That shows what I know about the Bible."

Telepathy

"Yes, sir, we modern young men are far more advanced than you might think. Now I can tell exactly what a person is thinking."
"If that's the case, I humbly beg your pardon."

In-laws and Outlaws

"So you want a divorce? Aren't your relations pleasant?"
"Oh, mine are pleasant enough, but hers are simply terrible."

Clipping His Wings

"Are you an angel, daddy?"
"Well—er, not exactly. Why do you ask?"
"Well, I heard mommie say that she's going to clip your wings."

Trapped

Well, you can't say I ran after you. No, and neither does a mouse trap run after mice; but it catches 'em just the same.

Next Move

"If someone left you a million dollars, what would you do?"
"Hire a trio of lawyers and try to get it."

Emphatic

"Would you like this hat turned down, dear?"
"How much does it cost?"
"Eleven dollars."
"Yes, by all means, turn it down."

Bring On the Finger Bowl

The man walked into an exclusive and costly restaurant. He was shown to a table and he immediately ordered a glass of water, which he swallowed with one gulp. Then he asked for another glass of water. While the waiter was away, the man took a small package of sandwiches and spread them on the table. No sooner was this done than a severe-looking individual came to the table and said, "I beg your pardon, sir, but this isn—"
"Who are you?" interrupted the man.
"I am the manager," was the impressive reply.
"Good!" said the man. "I was just going to send for you. Why isn't the orchestra playing?"

Expense Accounts

"What's this big item on your expense account?"
"Oh, that's the bill for my hotel."
"Well, don't buy any more hotels."

Too Odoriferous

"The secret of my health is eating onions."
"Yes, but how can anybody keep a secret like that?"

There Was a Hitch

Is your married life a happy one?
Yes, I married the woman of my dreams. She is as beautiful to me as the day I met her. Her hands are always white and soft. Her hair is never untidy, and her dresses are always the latest.
So you don't regret it?
No, but I'm getting pretty tired of eating in restaurants.

Thin

"Who sliced this ham?"
"The chef did, sir."
"Well, he darned near missed it."

Gotkool
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